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1984

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For people involved in the Australian microcomputing community

Five CP/M Word Processing Packages Reviewed

I have read too many reviews of word processing systems written by people with only limited experience in the area of word processing. Friends have also told me that XYZ word processor won't handle a particular problem well, when the basic problem is that they haven't taken the time to learn to use all its features. Let's face it, the more flexible and powerful a word processing system is, the more commands it will have, and the longer it will take to learn all its commands effectively. Given these circumstances, I thought it was for me to offer my experiences of the several packages I have used. My opinions are based on nearly three years experience using my computers for writing original manuscripts and operating a part-time word processing bureau. I also have taught word processing for a year. Copy processed by my bureau ranges from technical theses requiring many complex formulas, tables and changes in type font, to financial accounts and the merge printing of standard business documents. Our courses have ranged from custom tutorials for single executives to month-long training programs designed to help unemployed people gain computer skills. In this article I survey Perfect Writer, Select, Spellbinder, The Final Word, and Wordstar. For each program, I pay particular attention to the ease with which it can be learned, the scope and power of its editing commands, its capabilities for formatting the output, the ergonomics of its command structure as controlled from the home keys or programmable function keys, and special advantages for particular kinds of typing. Various problems encountered in installing the programs for various printers and in transferring text files among them will also be discussed. No one program is superior for all applications, and each has at least one application where it is clearly better than others. Before reviewing the programs individually, I offer some general comments on aspects of the interface between the computer and the operator. To date, most users have paid far too little attention to how they interact with the computer once the program has been mastered. "Ergonomics" and "user-friendliness' are industry buzzwords referring to important characteristics which should be examined carefully before selecting any computer or word processing system. "Ergonomics" is concerned with the efficient and economic use of human energy in achieving specific tasks. When applied to word processing, ergonomic systems allow the operator to work with a minimum of keystrokes, reducing keystrokes, errors and physical or mental strain. Traditional computer keyboards (and typewriters before them) offer two excellent examples of bad ergonomic design. One is the QWERTY layout of the alphabetic keys which deliberately places commonly used characters away from home keys and under weak fingers (this was done early in the history of the mechanical typewriter to slow typists down so that they would not jam the mechanism). The other, and more specific, fault of the computer is placement of the control ⟨CTRL⟩ key. In the review I note how each program exacerbates or improves these faults. The CP/M operating system and many word processing programs running under it make heavy use of ⟨CTRL-CHAR⟩ (where ⟨CHAR⟩ is the alphabetic key pressed while the control key is held down) keystroking patterns to distinguish commands to the computer from keystrokes to be entered into text. Touch-typing primarily involves a linear sequence of single finger keystrokes based on short reaches away from the fingers' normal resting positions on the "home" keys (A,S,D,F) for the left hand, and (J,K,L,:) for the right. Any keying operation which breaks this pattern by requiring short reaches will substantially reduce typing speed, e.g., like those of entering a control character or using the shift key for capitals. Shifting is less disruptive than using the ⟨CTRL⟩ key because it normally occurs just after the start of a sentence, coinciding with a natural pause in thought. Shifting is also facilitated by the shift keys' large size, duplication, and placement close to the home keys, which allows one hand to hold shift while the other hand types the shifted character. (In passing, I note IBM's incredibly bad design decision on the PC to place an additional character key between the left hand home keys and the shift key.) By contrast, the ⟨CTRL⟩ key is usually one of the smallest keys on the board and is placed at the left edge far away from the home keys. This guarantees that the left little finger, normally the weakest and least

1983 Review

Speech Synthesis

Canada's Hyperion

The Window Wars Begin

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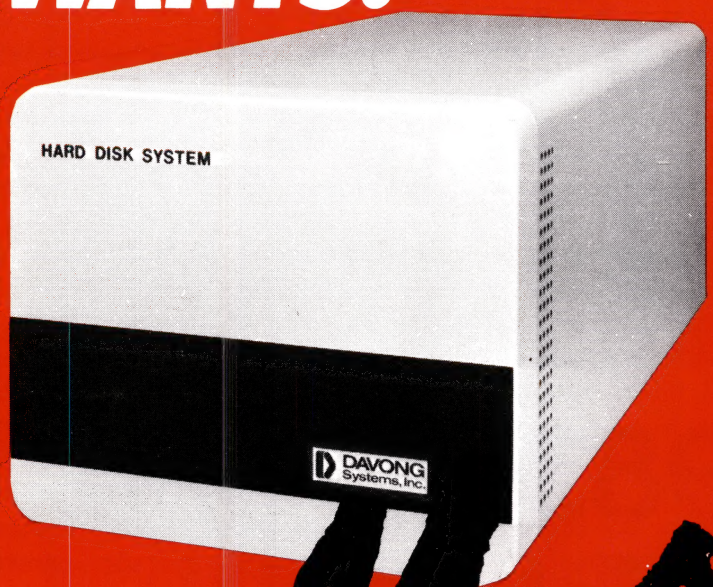

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Volume 1, No. 10
JANUARY 1984

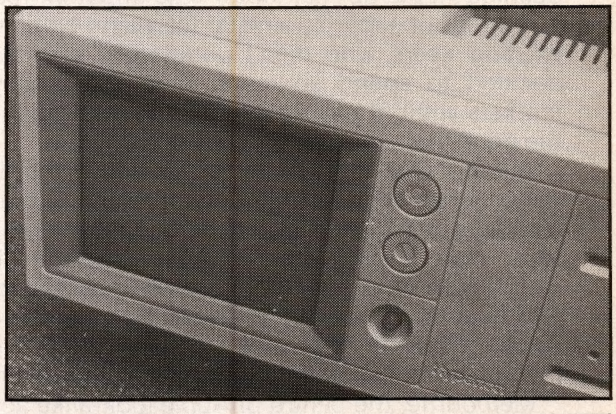
Index

News:

Features:

1983 Reviewed:

Departments:



We apologise to readers of the December issue who received a copy with damaged pages. A number of copies found their way to subscribers and newsagents with pages which had been separated as spoils. For reasons totally unknown (and if known would be incomprehensible), some of these spoils were bound into regular copies. Please contact Australian Micro's Circulation Manager for a replacement (until stocks last).

Ten Apples a day doesn't...

THE judgement of the hardcore user community is always perceptive, and usually vindicated by events. Only its technical arrogance caused it to disregard the Apple II and Commodore 64 when they were released. Both machines were successful because they offered attractive and affordable computing to a new generation of users rather than existing users.

In Australia, the coming of Apple Inc was awaited with enthusiasm by the Apple community, hopeful that Apple would be able to provide levels of support and interest that had taxed the resources of local distributor Electronic Concepts.

But the team of people Apple Australia assembled made the user community uneasy. Sourced largely from the minicomputer industry, it was felt they might not understand the orthodox interpretation of Apple's philosophical commitment to personal computing.

Subsequent events confirmed their suspicions. Apple Australia's calls for higher levels of support and service from its dealers, backed by an advertising campaign aimed at the corporate sector, both for business and pleasure, seemed to be pushing Apple up-market for little apparent reason.

A series of superbly sinister television commercials perplexed existing users who didn't understand why the company had decided to spend so much time and money chasing these markets without paying attention to cultivating and maintaining the great marketing resource of its user base.

Apple's inability to influence and control its distribution network has been a continuing problem for the company. Many leading Apple dealers also became IBM dealers just before Apple took over distribution in Australia, and the other major distribution channel, Computerland has had its own problems, and been concerned to promote its own view of the market to Apple. Most of the other dealers are involved with other manufacturers' in a variety of retailing situations.

Melbourne, the centre of Apple look-alike activity, has always been a problem for the leading suppliers and Apple has not had the support of aggressive dealers like those operating in Sydney.

Apple's sales have not been good this year. While still substantial compared with other suppliers, it appears the market has begun to lose interest in the Apple II with its price/performance leaving the system uneasily positioned between the top and bottom end.

The company decided to sort out its distribution problems by firing all its dealers ... then requalifying them. Apple, explaining its motives, said it wanted a higher level of support and service from its dealers.

With Apple Inc committing itself to a strategy of producing a wide range of products, competing in all personal computing markets and releasing a new generation of personal computers early in 1984, effective control and influence over its distribution network is vital.

Apple faces some hard decisions and must consider encouraging single-product dealers, support for the personal dimension of computing rather than corporate computing, and using the resources of its user base.

Apple's Macintosh is the most important release scheduled for 1984. The degree of its success or failure will have far-reaching implications for personal computing. Apple will have a difficult time selling Macintosh in Australia, and it shouldn't make the job more difficult by ignoring the goodwill and support of it's users.

— Ian Webster

australian Micro computer magazine

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Hewlett-Packard releases PC

HEWLETT-Packard has released a new personal computer, the HP 150. The 8Mhz, 8088 processor-based system incorporates a touch-sensitive screen with a resolution of 25 x 40. The touch screen is implemented using infrared diodes around the inside edge of the screen bezel.

The HP 150 has 256K of RAM expandable to 640K, a detachable keyboard, serial and parallel ports, a 390 x 512 high-resolution graphics and dual 3½in single-sided, single-density drives with 256K capacity. The operating system provided is MS-DOS and Hewlett-Packard is supporting the machine with implementations of popular applications programs.

The US retail price of the machine is $US3995, and the microcomputer is expected to be released in Australia early next year.

Army Signals opts for Poly

AN EDUCATION-based computer system developed in New Zealand will be installed to train signals operators in the Australian Army. The Poly learning support system microcomputers — which already are being used in more than 20 New Zealand schools — initially will be used in training establishments in Melbourne and Brisbane.

The system was developed in conjunction with the New Zealand Education Department. Under a contract of about $A400,000, 87 Polys and eight Proteus microcomputers will go into three training rooms in Victoria and one in Queensland.

IBM enhances PC and PC-XT

IBM has announced enhanced versions of both its Personal Computer and Personal Computer XT that allow users to access information stored in IBM mainframes. Both micros are:

- The Personal Computer XT/370, which allows users to connect to a host processor operating under the VM/-CMS operating system. The micro also can process locally VM/370 applications in up to 4M-bytes of virtual memory.

IBM also announced a control program for the XT/370 that the company says allows users to run "many (370, 4300 series and 30 series) programs unchanged on their desktop using familiar program languages and command procedures".

- The IBM 3270 Personal Computer, or the 3270-PC, which lets users tap the power of multiple host processors while retaining local microcomputer capabilities. The unit offers users the ability to run concurrently up to seven applications, four of which can emanate from a larger host, such as 1300 or 3080 series processors.

The Personal Computer XT/370 is basically an XT micro with three additional circuit boards. The first board gives the XT the ability to emulate an IBM 3277, model 2 display station, and also allows users to connect XT micros to an IBM 3774 controller.

The second board provides an additional 524K-bytes of real memory and the ability to store up to 4M-bytes of information virtually. The third board includes a specialised Intel Corp 8087 microprocessor to perform floating-point operations and two Motorola Inc 68000 microprocessors, both to reproduce and to emulate segments of the 370 instruction set.

The XT-370 reportedly offers roughly half the internal performance of the 4321, the smallest IBM 4300 series processor, IBM claims. The XT/370 will be available in the second quarter of next year.

The purchase price of the micro with 10M-bytes of fixed disk storage is $US8995. Current users of the IBM Personal Computer XT can upgrade their processors to XT/370 configurations for $US3,790.

The 3270 Personal Computer reportedly displays information simultaneously in up to seven user-defined windows. The windows can contain information from both host processors and the local Personal Computer.

The 3270-PC is available in three standard models with main memory ranging from 256K-bytes to 640K-bytes. Prices range from $US4290 to $US7180.

Deliveries are scheduled for first quarter of next year.

NCR to provide library network

NCR will instal the biggest library computer network in Australia to streamline the total library operations of five lower North Shore Sydney councils — North Sydney, Manly, Mosman, Willoughby and Lane Cove.

The Shorelink library service is based on a NCR 9300 mainframe with a specially designed book application software program, developed by Stowe Computer Consultants and 66 VDUs for five libraries. The inter-linked library system is designed to give an improved service to the public.

With the installation of the VDUs — 10 to 16 in each library — all linked up with the NCR mainframe, book borrowers will be able to check whether the book they want it available or out on loan. Through the computer system borrowers also will have access to books at other libraries in the Shorelink network, including those that may not be available at their local library. Shorelink's project manager, Kay Clarke, said another major advantage of the system was that it reduced tedious clerical duties for librarians, such as checking on overdue books and book reservations, enabling staff to do more professional work.

Apart from the clerical time saved, the new computer system would increase the efficiency of book control through automated ordering and cataloguing.

Checking the equipment (from left) Willoughby's chief librarian, John Flint, Shorelink manager, Kay Clarke and NCR's managing director Warren Castray.

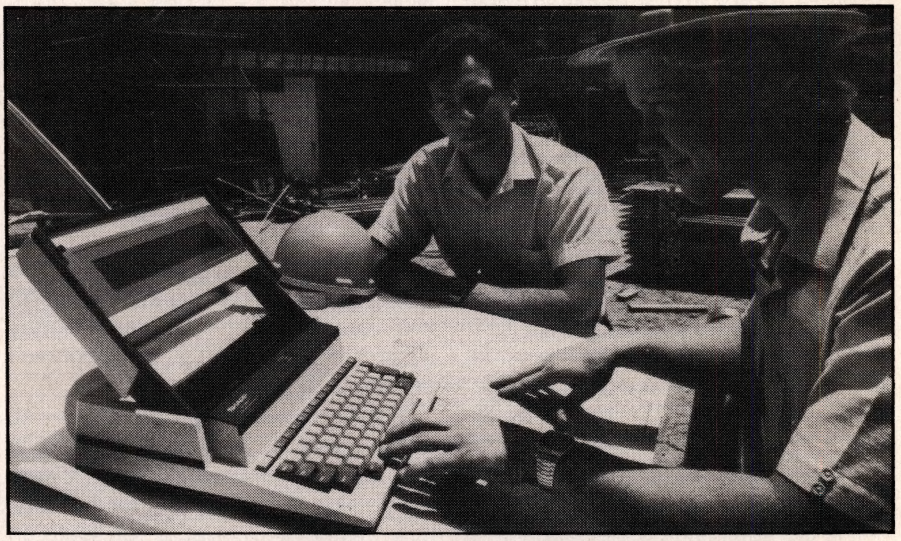
Mrs Clarke said membership of the Shorelink network entitled people to use all five libraries.

As well as book borrowing facilities, the computer system could be used by the public for all forms of community information, from such services as meals-on-wheels, to providing a history of the local area or information about sporting groups in the district. The compact NCR processor, which will be located at the Lane Cove library and linked by Telecom landline to the peripheral equipment in the five libraries, has 3M-bytes of memory and 567M-bytes disk storage.

Sharp forms computer marketing division

SHARP Corporation of Australia has announced the formation of an Industrial Electronics Group with two divisions — one specifically to handle computer products and the second for its other business equipment, which includes cash registers, copiers and typewriters. From now on, Sharp's range of desktop and portable computers and associated future products will be exclusively marketed by the new Computers & Systems Division.

The PC-5000 portable microcomputer is the first new product to be marketed by the division. Externally resembling a small portable typewriter and weighing just 4.5 kilos in its basic form, the PC-5000 unfolds to reveal a full-size keyboard and an eight line by 80/char display. The PC-5000 offers a builtin printer as an option. Internally, the unit features an PC-5000 offers a builtin printer as an option. Internally, the unit features an 8088 16-bit processor with 128K-bytes of RAM (expandable to 256K-bytes), 64K-bytes of ROM while, under a flip cover just above the keyboard, optional 128K-bytes bubble memory modules, which appear to the user as a disk drive. Two additional ROM modules can be plugged into the base of the machine, giving a total of 192K-bytes. An internal battery allows portable operation for up to eight or nine hours, although this will be affected by use of the internal printer.



The PC-5000 portable which is the first new product to be marketed by Sharp Corp's computers and systems division.

Initial software for the PC-5000 will include the MS-DOS operating system, giving access to a wide range of software. The first applications will be the Easy range of software and Sorcim's Super series — SuperCalc, SuperWriter, etc. These will be supplied on plug-in ROM modules. At the printer at the back of the unit is capable of up to 37 characters per second while printing 12 char/sec per inch. The thermal print head will print on either special thermal paper or on board paper via a thermal transfer ribbon. It can also operate in a graphics mode to dump charts and graphs. Also at the back of the computer are connectors for an RS-232C serial port, allowing connection to external devices such as other computers or printers, and a floppy disk interface, allowing connection of 5¼in floppy disks with a capacity of 320K-bytes per disk (IBM format).

The PC-5000 is priced at $A2700 including sales tax, and the optional printer at $A750 including tax.

Subsiduary for Datacraft

DATACRAFT (Australia) Pty Ltd has established a subsiduary, Datacraft Office Systems, to distribute the Fortune 32:16 MU 68000-based multi-user system in Australia. The Fortune 32:16 supports memory of 256K RAM expandable to 1M-byte and disk capacity of 2M-bytes to 80M-bytes and 16 workstations running under Unix V7. Fortune Systems has been one of the glamor US microcomputer companies, raising $US110 million in a public offering. Despite delivering 9000 systems, the company has been under extreme pressure in the second half of 1983, resulting in the resignation of the company's founder and the re-organisation of senior management. Datacraft intends to position the Fortune 32:16 in the office automation market against the Wang office system.

Fortune system software products include a range of relational database managers and high-languages (C, Cobol, C Basic, SMC Business Basic, Fortran 77, Pascal and APL). Software also extends to a range of conversion aids and emulators for several popular systems, financial modelling systems, and communications facilities including asynchronous, batch bisynchronous, interactive bisynchronous and networking.

Datacraft has a range of Australian packages running on the Fortune 32:16, including business accounting modules, production systems, share register and purchase management.

Prices range from under $A12,000 for a basic system, up to $A31,000 for a four-workstation system.

Microsoft goes marketing mad

JUST about the bleakest of the bleak stands at Data83 was occupied by a rotating shift of local representatives of software leader Microsoft, no longer Wiser. The only offering on the stand, apart from a cordial chat, was an invitation to Microsoft's hospitality suite at nearby Marco Polo Motor Inn.

And therein lies a different tale . . .

At Marco Polo, Microsoft had set up PCs and other computers to provide detailed demonstration of its new word processor Microsoft Word, its own mouse, a Multiplan spreadsheet program development tool called Multitools, and any of its other products in which the visitor showed an interest.

Australian Micro had just received a copy of a Microsoft Word demonstration disk (without printing or saving commands) which was distributed inside every copy of US magazine *PC World* as a promo, and so took it along to the hospitality suite to check if it booted OK. The test proved alright, but led into a comprehensive demonstration of the complete product.

While *Word's* formal review will be left to the experts, for one journo previously unable to avoid Wordstar, it at least looked like a beacon at the end of the tunnel.

If you'd like to spend a bit less time at the office, take it home with you.

You've seen for yourself how much time and effort a computer can save you at the office, so think of how much more it could do if you could take it home. Or how useful it would be to take along on business trips.

At ComputerLand we've got the answer. It's the Hyperion portable computer, which weighs only 10 kg and fits into a convenient carrying case.

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Wherever you live, or wherever you're travelling, you're about 30 seconds away from your office, because that's how long it takes to set up the computer and get down to business.

Hyperion has a number of other advantages, like a large 18 cm screen and interchangeable disk systems, which we can explain to you best at your local ComputerLand store.

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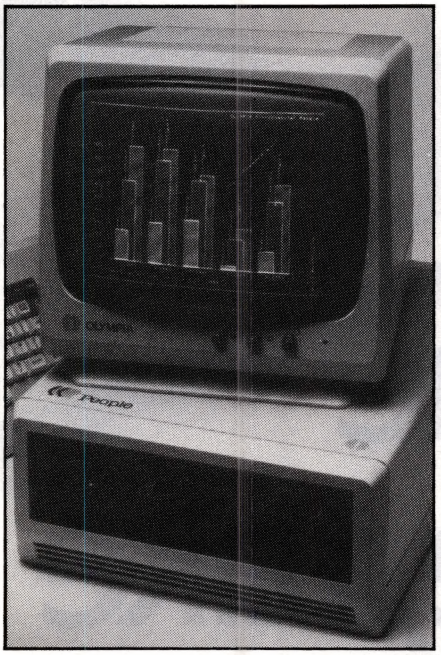
Olympia enters business market



OLYMPIA Australia has entered the microcomputer market with the release of the 16-bit People micro. Designed for business and administrative applications, the People will support the operating systems — CP/M-86, MS-DOS, and MP/M-86. The basic configuration, consisting of the central processing unit, a tilt and swivel screen and ergonomically designed keyboard, will sell for a recommended $A5495. The system uses the Intel 8086 microprocessor, and has two 5¼in floppy disk drives, each with 640K-bytes of capacity. Olympia says the system's memory can be expanded from 128 to 512K-bytes, and a 10M-byte Winchester hard disk unit can be added in place of the second floppy disk drive for an extra $A3395 retail. The People's 12in screen gives 25 lines of 80 characters each, and has a graphics resolution of 640 x 475 pixels. An optional color monitor will be available. Programming languages, Assembler, CBasic, Cobol and Pascal, are all available.

Olympia says software for the People includes the industry standard word processing software, WordStar, and SuperCalc and dBase II. Specialised vertical software for different business and service organisations will also be made available. The system will be distributed through Olympic's dealer network and made available to independent computer dealers. The promotion campaign for the system will be based on the slogan *"People who need People"*.

Bug bites Intel chip

INTEL has admitted there is a bug in its 80186 chip that surfaces in certain conditions involving the division of two operands. It has also stated that the cue status within the 80186 does not function correctly with the 80287 floating point processor. A mask change to correct the problem will produce samples in December.

Intel has stated its not responsible for the software incompatibility now faced by some software developers, moving their applications from the 8086 to the 80186, who have not followed Intel's recommendations with regard to reserved vector locations on the 8086 microprocessor. Dulmont spokesman, Terry Crews, said they had not had any problems installing MS-DOS 2.0 on the 80186-based Magnum portable computer.

Centre offers classroom courses

HURSTVILLE-based personal computer dealer, Direct Computer Sales,, has opened a Guided Learning Centre to provide microcomputer courses for the southern suburbs of Sydney. DCS director, Rob Smythe, said the concept of the centre is for students to learn at their own pace under tutor supervision at a time convenient for them. Courses will be available for children, families and business people, and specialised classroom courses provided for organisations who want to train groups of people. The centre will be open during the week, at evenings, and the weekend. A computer will be available for each student so they can get "hands-on" experience.

At the opening, systems ranging from business applications to spreadsheets, and educational and recreational programs were shown running on the IBM PC, Apple and Commodore systems. The Centre is located in the Westpack building, 243 Forest Road, Hurstville.

Unit upgrades game system

THE expansion unit to upgrade the Coleco game system to the Adam home computer was shown in Sydney last month. The expansion package comprises an expansion box with 80K RAM, three internal expansion slots, a cartridge tape drive and space for a second tape drive. The keyboard unit is separate and features 75 keys, including many function keys. The printer is a 20cps daisywheel. The three units are joined by cable and the Coleco game console is plugged into the back of the expansion unit.

The system shows an unusual collection of influences. Despite the high quality of the graphics and sound provided by the Coleco games unit, responsible for its success, the ROM Basic is based on Applesoft Basic with no support for Coleco's enhanced features. The word processing software in ROM is modelled on an electric typewriter and, is very slow, although the extensive use of function keys and the conceptual organisation of the program make it suitable for first-time users. The printer is noisy and slow.

CBS Electronics will be distributing the unit through national retailers land electronic specialty stores. Martin Morrow, managing director of CBS Electronics Australia, said it was hoped the new unit would retail for between $A950 and $A990, which would bring the cost of the complete unit to about $A1200. The Colecovision games modules are presently selling at $A249.

Portable comes in briefcase

THE first of many releases at the Las Vegas Comdex exhibition indicate the consolidation of the trend to briefcase portables. Visual Computer has released the Commuter personal computer — an IBM PC compatible portable, weighing 8kg and priced at $US1995.

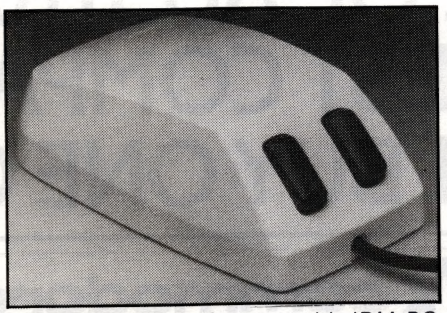
Packaged in a slim 15in x 18in x 3in attache case, the Commuter includes as standard features: 128K-system memory resident on a single, multilayer PC board, expandable to 512K; MS—DOS 2.1 operating system; 83-key full keyboard with all IBM functions and identical keyboard layout; 5¼in double-sided double-density 360K floppy disk drive (additional drive optional); bit map color graphic support; parallel port; RS232C serial port; RGB direct drive output for high resolution monochrome or color monitors; composite video output; power-up diagnostics; and a connector for integral IBM expansion chassis support for additional IBM memory cards and hard disk.

An 80 x 16 LCD display is optional; support logic for 80 x 25 and 40 x 25 display is standard. This provides the logic for high resolution monochrome and color displays.

New addition to Microsoft family

MICROSOFT has announced that Microsoft Word, an IBM-PC word processing system, is now available in Australia. Microsoft Word is the latest addition to the family of productivity tools which also includes the Multiplan electronic worksheet. The Microsoft Word derives its ease of use from a "see what you get" approach to word processing, plus a set of technologically advanced features which include: the provision for an electronic mouse for pointing and command execution; an "undo" command; advanced word wrap features; innovative direct formatting capabilities; and an extensive, context-sensitive online help system.

The previously announced Microsoft mouse, suitable for use with the IBM PC as well as any MS-DOS-based personal computer, is also now available in Australia. Priced at $A195, it comes with three application programs and is available from all Microsoft authorised dealers.



Microsoft mouse for use with IBM PC and other MS-DOS-based machines.

Two versions are available for use with a wide range of computers. The first version will be for the IBM PC and includes a plug-in board for the PC. All the interface hardware is contained on the board that fits into any slot in the IBM's motherboard. The second version is for any MS-DOS-based computer.

This mouse is completely self-contained and does not require an external power supply.

Great, data disaster of '83

FINALLY, there was one too many computer exhibitions, so nobody went. Graphic Directions' previously quite successful Data series was thrown into chaos, partly by Melbourne's fickle weather, and partly by the giant shadow cast by 10ACC only weeks earlier.

While some stand-holders were keen to blame the organiser's for lack of promotion (and thus public awareness), the formula used varied little from that which had proved quite successful in previous years. The difference may have been more in the lack of most of the drawcard exhibitors

If Apple had been there and attracted the kind of numbers it seems to have been capable of, Data83 certainly would have been remembered for the start of open warfare between it and the Apple compatibles. As it was, war was declared, but nobody came.

Half-a-dozen different Asian improvements on the Apple II were prominent, with such builtin features as numeric pad and dual processor. The only real Apple was being used to demonstrate somebody else's uninterruptable power supply.

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Atari price rise

FACED with a shortage of computers and rising costs, Atari has announced it will raise the prices of its 600XL and 800XL computers, as well as the prices of other hardware and software.

When Atari's wholesale price hikes become effective January 1, street prices of the 16K RAM 600XL will rise from about $US199 to $US239. The 64K RAM 800XL, which is just being shipped to dealers, could wind up with a $US339 price tag, up from the expected $US299.

The price hike announcement came on the same day Coleco raised the cost of its Adam home computer system (from a suggested list price of $600 to $750) and several weeks after Texas Instruments pulled out of the home-computer market, battered by price wars with Commodore.

Atari chairman James Morgan says the decision to raise prices "is appropriate, given the high quality of Atari home computers and video-game consoles, as well as the strong demand for them in the marketplace. Recent events in the home-computer industry point to the sheer folly of spiraling downward prices on home-computer products that are of superior quality."

Anti-hacker law

IF YOU operate an electronic bulletin-board system and live in Wisconsin, in several months you may need to carefully police what information users leave on your computer.

In the aftermath of the widely publicised computers capers of the 414 gang this summer, the Wisconsin legislature is preparing to pass a new computer-crime bill specifically targeted at computer "hackers".

The new law, which has already passed the State assembly and is now in committee before the Wisconsin senate, includes provisions that will make computer-tampering a felony punishable with a fine of up to $US10,000 and imprisonment of up to 10 years for anyone convicted of creating a life-threatening situation through destruction or alteration of computer records.

Lesser violations would be misdemeanors subject to a $US1000 fine. The law makes software programs that search through local telephone exchanges for computer dial-up tones illegal.

The law also provides recourse for "manufacturers and trade associations" to close down bulletin boards used by hobbyists that include information on how to break into computer systems.

Victor shuffle

CHARLES Peddle has stepped down from his position as president and chief executive officer of Victor Technologies, maker of the Victor 9000 business system and one of the current victims of the personal-computer market war. Peddle now becomes the company vice chairman of the board.

The one-year-old company, based in Scotts Valley, California, has axed more than 1650 employees since August and is reorganising its management structure. While Richard Couch will continue to serve as executive vice-president, the board of directors expects consultant Michael Faherty, a Texas venture capitalist, to pull the company out its dismal state.

The position of chief executive officer currently remains vacant, according to a release prepared by Victor Technologies' public relations department.

Morrow portable

MORROW, of San Leandro, plans to offer a portable version of its Micro Decision personal computer. Morrow is working on a lap size computer and an IBM PC-compatible computer that are not scheduled to be ready until the middle of next year.

The new machine will contain virtually the same electronics as the successful Micro Decision, in a 23-pound portable unit with a 9in screen and dual 5¼in disk drives.

The portable will come in two configurations: $US1590 for single-sided disk drives and $US1890 for double-sided drives.

In IBM's footsteps

AT LEAST four more companies — Vector Graphic, North Star, Panasonic and Visual Technology — have announced machines designed to run software developed initially for the IBM PC.

There are already several machines that run most IBM PC programs without modification. Vector Graphic's answer to the challenge is to sell a machine with features not available in the IBM PC or its clones. Such an approach could appeal to software companies like Software Arts of Cambridge, Massachusetts, developer of TK Solver.

Panasonic has opted for a lower cost 28-pound, portable machine with a built-in printer called the Sr. Partner that comes with several application programs. Panasonic says its machine is compatible with the IBM PC, but sells for $US2495.

MS-DOS for Apple

RANA Systems of Chatsworth, California, has announced an add-in for the Apple IIe and II Plus, the Rana 8086/2, that will run Microsoft's popular 16-bit opeating system, MS-DOS.

Rana's approach is similar to, though more elaborate than, the approach taken by Microsoft several years ago when it introduced the Z80 card that allowed the Apple to run popular CP/M operating-system software.

The product consists of a board that plugs into the Apple. The board connects to a small box containing an 8086 processor and dual double-sided, double density drives which read both Apple- and IBM-formatted diskettes.

Smart Inmos

INMOS has unveiled its fifth generation building block, the Transputer.

It will be a 32-bit microprocessor fabricated in complementary metal oxide silicon (CMOS) and have many semi-custom capabilities that will enable users to configure the Transputer to a wide range of applications.

Transputer is believed to be a direct competitor to Motorola's powerful 16-bit 68000 and Intel's 80186 microprocessors, and will compete with all other processors. □

East Lindfield Public School Computer Fair

COMPUTER fairs have become a popular substitute for school fetes in Sydney. Since the first Computer fair at Mosman High School earlier this year, they have been held at Avalon Primary, East Lindfield Public and one is planned for Plumpton High School.

The parents and citizens' organisations at these schools become motivated to organise the fairs after discussing the purchase of computer equipment for their school. The fair provides an opportunity for students, teachers, parents and the wider community to see a broad range of equipment as well as raise money for the purchase of computers. Some major suppliers attend but usually encourage their local dealers and retailers to participate.

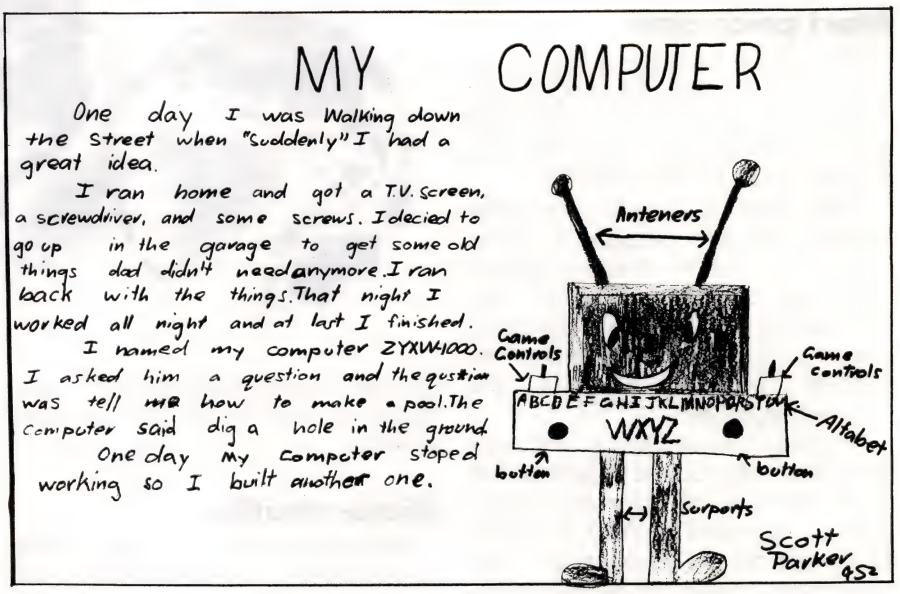
At East Lindfield, in a North Shore suburb of Sydney, the organising committee, lead by John Harston from CRI and Len Rust from IDC, was able to attract representation from all leading suppliers. More than 20 dealers paid $A300 for a stand and entertained 4000 people over two days.

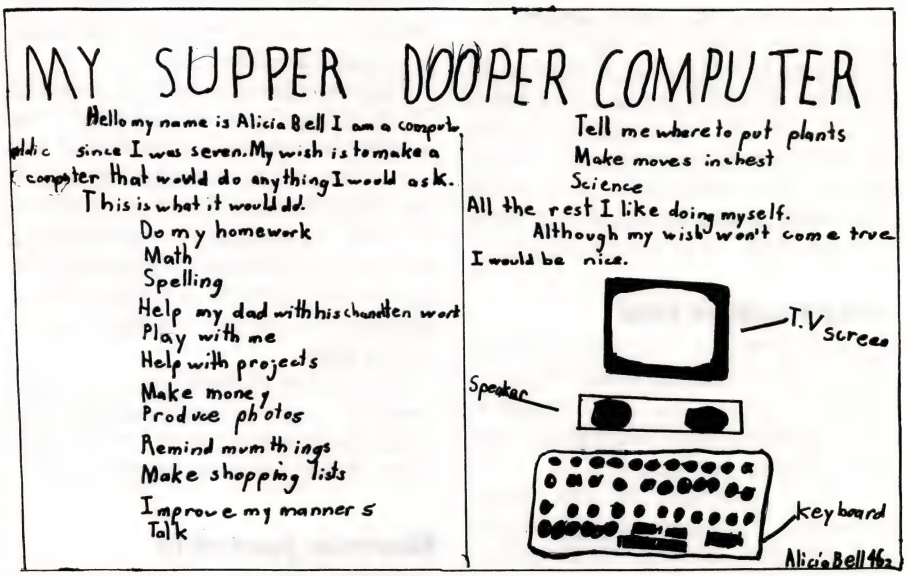
Professor Vance Gledhill opened the Fair, and Simon "Wonderworld" Townsend presented the competition prizes. School principal, George Bell, said proceeds from the fair would go towards the $A10,000 the school would spend on computing in 1984.

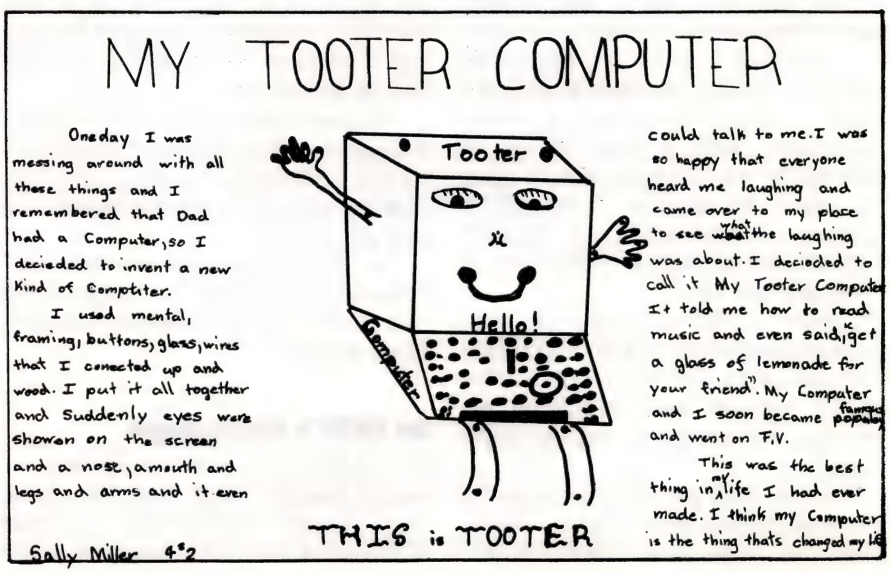
Highlight of the fair was the display of students' projects in the school library. Each class prepared projects on the topic *Towards the year 2000* ranging from drawings and models to essays.

The exhibition provided an insight into the attitudes of children to computers and computing at a time when many computer educators are trying to develop approaches to the use of computers in schools. The projects demonstrate the futility of computer educators, barely computer literate themselves, developing curricula that treat the computer as an object when the invasion of our society by computer-based technology is recognised and accepted by students.

The following pages show some of the projects from third and fourth class at East Lindfield Public School.







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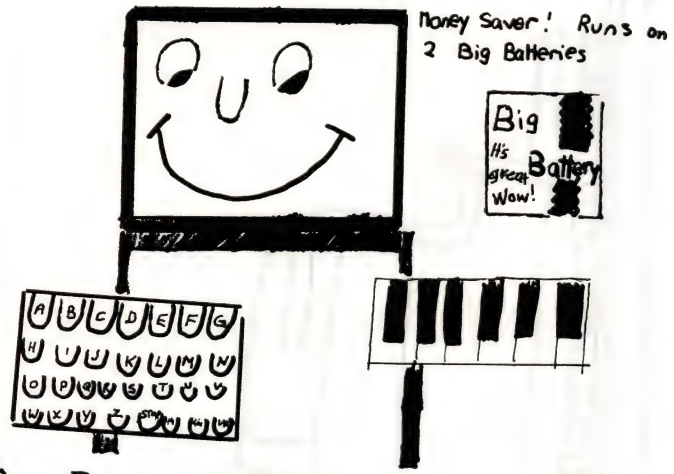

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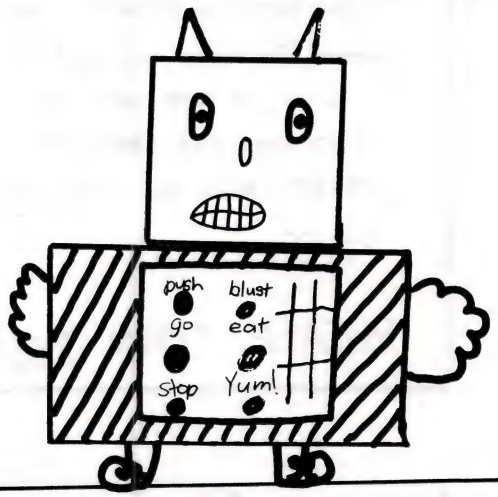
Edwina

The Computer .

Last Chistams I got a marchine It's tall and it is made from metal It wiggles aboat. It's name is Wonderful marchine because it does my homework. And once made some lollies I shared it with friend her name is Sarah, and she gave my some of her lollies they were yum! yum! The Wonderful marchine nearly does everthing for me and for my sister and my best friend Sarah Scott

The End

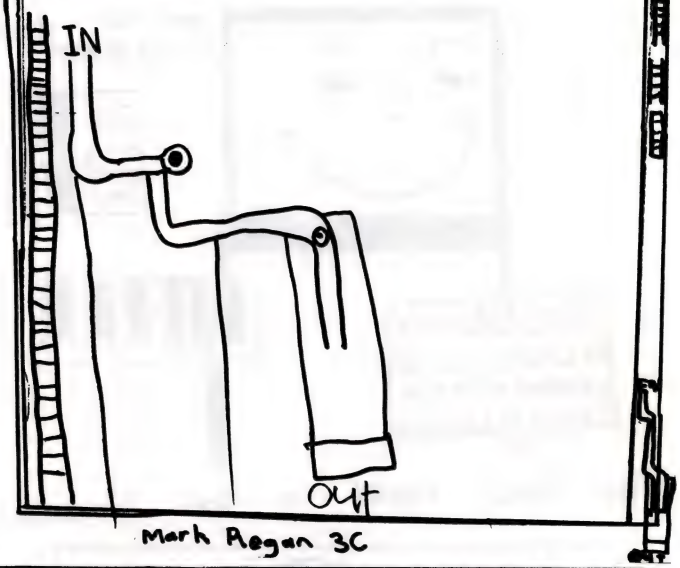


MY MAGIC MACHINE

It was my tenth birthday. I wokeup to find this big parcel in my room. It was bigger than me I had. climb on a steep ladder to openit. There was a note inside

I am MR wally PROFESSOR the homework Machine. Read my instructions carefull put the home workin at the top. pull the lever the finished homework comes out at the bottm

I tried this and same out. It was correct wwere the best of friends.



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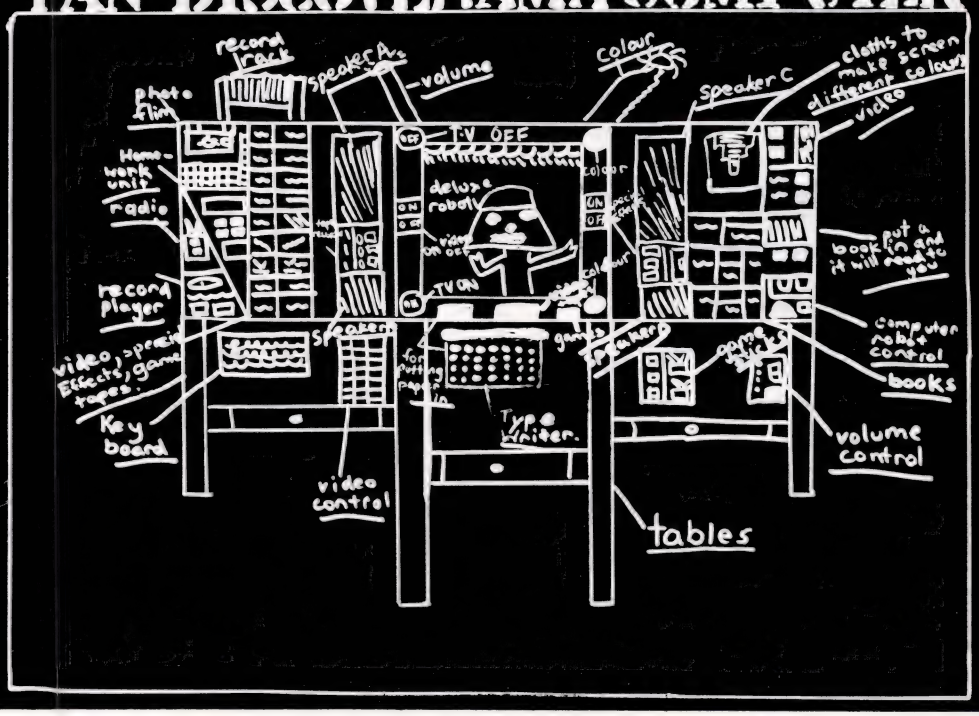

The three most common mistakes you can make when choosing a microcomputer.

The first one is fundamental, but it is ignored by most people who buy a name and not a range of functions. There are, in fact, very few bad computers around but that doesn't mean that all computers are born equal. Choose one that best suits your needs.

Next, take the trouble to check speed and functions. Few people do. They simply take it for granted that all microcomputers are the same in performance. For instance, the most important aspect of your computer is the size of its memory. The bigger the memory and the memory potential, the longer it will last. The faster it works the more work gets done.

Thirdly, the real name of the computer game is Software. That is, the programmes you can buy off the shelf to run in your microcomputer. It is surprising how many hard nosed accountants buy a microcomputer for one or two functions when, with the right Software, it can perform half a dozen or more important office tasks.

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Speech technologists are discovering that microcomputers are capable of . . .

Coming to terms with speech

WOULDN'T it be great to be able to program or enter data to a computer verbally? No clumsy typing, no program crashes because of missing or wrong punctuation, no eye-straining monitors — not even a mouse.

Having the computer talk to you would also be great; it could teach you a foreign language, verify the data you entered, or talk you through a tutorial about itself when you needed help.

In general, speech recognition and verbal output are most useful in situations in which a person's hands or eyes are needed away from the computer. In the case of verbal input, this means situations like inventory taking in which your hands are moving objects around and your eyes are checking quantities or laboratory work. In terms of vocal output, applications include status warnings when something is overheating, or progress indicators, such as calling out the floors in an elevator.

Let's examine speech itself. Speech is sound produced by people that transmits information about such things as the physical environment or our mental and physical activities. There is no limit to the number of things you can say in any one human language, and there is variation within a language.

Examining the sounds of a language, we find that the sound pattern of any language has regular variations that its speakers may not be conscious of. *Phoneme* is the term linguists use to refer to a set of sounds that function as one unit in a given language. For example, the English phoneme *t* is composed of four sounds.

In *top,* the *t* is followed by a puff of air strong enough to blow out a match held a couple of inches from the lips; in *stop,* however, no such puff of breath follows the *t.* In *pot* the breath is stopped and the consonant is not even released.

Phonemes have no connection with spelling. *To, too* and *two,* for example, are composed of the same phonemes.

In physical terms, when speech sounds are made, the vocal tract creates and changes cavities in which certain frequencies resonate. These frequencies may be produced by the vocal cords or by air moving through constrictions, as in the *s* sound.

Two resonances may be sounded by flicking a finger against your cheek and against your throat just above the Adam's apple.

The human voice produces many formants, but only four of them are essential to understanding English. The other formants are heard as the qualities that give voices individuality.

Computers and speech

Speech products for microcomputers perform one or more of the following functions: storage, which includes recording and playing back speech; synthesis, which is the creation of speech; and automatic speech recognition.

You should examine products carefully and note what they really do before buying. Speech storage devices work like very sophisticated tape recorders, the important difference being that speech storage devices enable you to program stored words together to create a variety of messages.

For example, if you want an alert to be announced when any one of 10 boilers is overheating, you need to record only 12 phrases: "attention, boiler number",

"is overheating", and the numbers one through 10. The program for this application would select the appropriate number, depending on the signal received by the computer from the boilers, and insert the number between the first two phrases.

An example of a speech storage product is *Supertalker II,* by Mountain Computer Inc, of the US.

Other important applications of speech storage include sending verbal memos (voice mail), leaving verbal messages (voice store and forward), sending verbal messages via telecommunications (vocoding), and recording verbal commentaries about written material.

Time-domain synthesis

There are two popular ways for computers to store speech: time-domain synthesis and frequency-domain synthesis. With time-domain synthesis, the waveform of a signal coming from a microphone or telephone is analysed.

In the simplest form of this method, called pulse code modulation (PCM), the strength of the signal (the amplitude of the waveform) is sampled at regular intervals, and numbers representing the signal strengths are stored in sequence.

The conversion to numbers is carried out by an analog-to-digital converter, which acts somewhat like a modem. To play the word or phrase back, the signal is reconstituted by retrieving the numbers in sequence from memory and sending out a signal whose strength corresponds to the numbers that have been retrieved.

Usually, the transition from numbers to a continuous wave is made by a separate hardware device, a digital-to-analog converter.

Since 4000 Hz is the highest frequency that needs to be stored for comprehensible speech, accurate time-domain analysis requires 8000 samples a second. According to the US sampling rate standard for telephone speech transmission, numbers eight bits long are required to store the amplitude of each sampling. Using the 255 levels of amplitude that can be stored in eight bits, it takes 64,000 bits of memory to store 1 second of speech (8000 samples a second x eight bits).

Although storing speech using as little memory as possible is desirable, it is impossible to cut back from the standard just described and retain the same level of accuracy, or fidelity. The less information about something you have, the less accurately you can reconstruct it. The trade-off between memory requirements and fidelity of reproduction is an important aspect of speech technology.

One approach to reducing memory needs is to eliminate redundant information about the waveform. This process is called speech compression and is analogous to freeze-drying coffee.

When water is eliminated from coffee, the coffee is easy to store and transport. However, in the process the quality of the coffee is compromised, as a comparison between reconstituted freeze-dried coffee and freshly brewed coffee shows.

Similarly, reconstituted, or synthesised, speech does not sound the same as spoken speech. One way of eliminating redundant information from a waveform is to calculate and store only the change in the amplitude of the waveform between one sampling period and the next.

An increase in amplitude is stored as a 1, a decrease as a 0, and silence as alternating 1s and 0s. This process, known as delta modulation, requires fewer bits a sample than PCM, since recording the relative change in amplitude takes only one bit a sample. Delta modulation, however, requires more frequent sampling than PCM.

A variation on this basic space-saving principle, adaptive delta pulse code modulation, varies the significance of a 1 or a 0 bit based on this history of the signal. This leads to even greater memory savings.

On playback, the information about the waveform is retrieved from memory, the process is reversed, and the results are sent to a digital-to-analog converter to be converted into sound.

Frequency-domain synthesis

In frequency-domain synthesis, an incoming utterance is analysed in terms of the loudness of individual frequencies of a speech sound. The results of the analysis are related to a mathematical model of the vocal tract. This process involves many complex calculations.

Encoding hardware for frequency-domain synthesis is not available for personal computers. Only decoding hardware and ROM chips containing encoded words and phrases are sold by personal computer speech-product manufacturers.

Each word or phrase stored by the manufacturer can be accessed by using a number that requires only a few bits, since the utterances are on a board separate from main memory. Linear-predictive coding (LPC) is the major type of frequency-domain synthesis used in the US.

In this method, speech is analysed digitally in terms of coefficients and parameters, each representing one aspect of speech, such as overall pitch or amplitude at a given frequency. These coefficients and parameters are stored in ROM chips.

Knowing the characteristics of the vocal tract, engineers can predict future coefficients and parameters based on past patterns. For example, the regularity of vowel sounds makes them predictable; to save memory, you need to store only the basic configuration of the vocal tract for a desired vowel sound and a duration for the sound.

When an utterance is to be played back, the parameters and coefficients are retrieved from ROM and drive a digital simulation of the vocal tract. This simulation sends out speech through a digital-to-analog converter. With LPC, only 800 bits, or 100 bytes, need be stored for a second of speech.

Phonetic speech synthesis

Phonetic speech synthesis is the least expensive speech technology. The process creates speech from scratch, with no input from a human voice. With phonetic speech synthesis, you type in the code for a speech sound, such as "oh" or "ah".

A code from the keyboard selects a block of memory in the synthesiser that contains the directions to operate a simulation of the vocal tract, and the sound is produced. In one method of speech synthesis, LPC parameters and coefficients are stored and drive an LPC model of the vocal tract.

In another approach, variable filters modify sound from an oscillator to produce the formants of vowels, and a noise source connected to another filter generates hissing sounds such as those represented by *f* and *sh.*

The sound produced by speech synthesisers sounds artificial in comparison with stored speech. The artificiality comes from the fact that the words and phrases of synthesised speech are composed of separate sounds in sequence, without the transitions between sounds that characterise normal speech.

With speech synthesisers, however, there is no limit to vocabulary or length of utterance, since any combination or number of sounds can be specified by putting the appropriate symbols in a program or entering them via a keyboard.

(Continued on page 19)

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Coming to terms with speech

(Continued from page 17)

Using speech synthesis is like having a device that can produce an unlimited amount of artificial coffee. Given the ability to produce an unlimited number of sequences of sounds when you input sound codes, using phonetic synthesis you can type in words and have the synthesiser produce the sounds. This conversion of spelling to sound is done with text-to-speech algorithms.

These algorithms usually take up 6K-bytes of memory each. The quality of these algorithms varies, since predicting pronunciation from English spelling requires many rules.

The greater the number of rules and exceptions, the greater the accuracy, cost, and memory requirements to produce comprehensible speech. Because some spellings are ambiguous (*read,* for example, can be pronounced two ways), it is sometimes necessary to type in sound codes that access speech sounds directly.

The sounds produced by typing in sound codes last an average of 100 milliseconds. At eight bits a sound, including intonation and pitch, 1 second of synthesised speech uses only 80 bits (10 bytes) of memory.

Speech recognition

Automatic speech recognition devices accept speech input rather than keyboard input. This input activates parts of programs so that the computer seems to obey verbal instructions.

The automatic speech recognition producers currently available for personal computers recognise only utterances bounded by a period of silence. Speech products that recognise continuous speech must locate the boundaries of an utterance.

In true recognition of continuous speech, utterances have to be parsed (analysed for grammar and meaning), and appropriate signals have to be returned to the main program for each unit parsed. An instruction such as, "Send copies of the following memo to all district managers," could be executed after the parsing process. Speech recognition at this level of sophistication is available only on mainframe computers.

Another type of speech recognition procedure consists of matching a stretch of speech to a pattern, called a template, that is stored in memory. Using statistical methods, distance evaluations, and dynamic programming to find the least degree of difference between two patterns, speech recognition products compare a set of templates to an incoming signal.

Through complex algorithms the closest match is determined from all possible matches.

When an incoming utterance is matched to a template, a signal is returned to the computer program, which branches based on whether the signal indicated a successful match or not. Templates may be entered either by the speaker or by the manufacturer. Templates are entered by the speaker in the case of speaker-verification systems, which match only the voice of a particular speaker to the template.

Templates are also entered by the speaker in speaker-dependent systems, which recognise the voice of the original speaker and possibly those of other speakers. The vocabulary of speaker-verification and speaker-dependent systems is limited only by the memory of the computer. In the case in which a match is to be made to a template regardless of the individual speaker (speaker-independent systems), the templates are usually entered by the manufacturer and the vocabulary is quite limited.

The actions that can be executed given a successful match of speech signal to template are unlimited and may range from dimming the lights in a room to activating a file to make more vocabulary available. Theoretically it would be possible to link an utterance to a basic keyword, a letter of the alphabet, or a punctuation mark, enabling a computer to be programmed verbally.

This capability is becoming available. Supersoft's *Voicedrive,* for example, enables the *Scratchpad* spreadsheet to be operated verbally. Each command, however, has to be entered by the user in training sessions before *Voicedrive* can be used.

Each stretch of speech entered is linked to a single command in the *Scratchpad* command set.

What speech technology means for you is that you can make your computer speak right now.

Talk to your personal computer, or have it talk to you and your friends. Speech technology will add a new dimension to your computing. Let your imagination run wild, and keep your ears open. □

• *Henry Pollard is a linguistics and speech consultant in the San Francisco Bay Area.*

In 1984, many Australians will encounter machines that talk . . .

WHO SAID THAT?

OFTEN a technology is invented, then developed by engineers pursuing an economically viable future for the technology. Prototype applications are demonstrated and discussed but are not considered ready for commercial application, when suddenly, a mundane application of the technology is discovered.

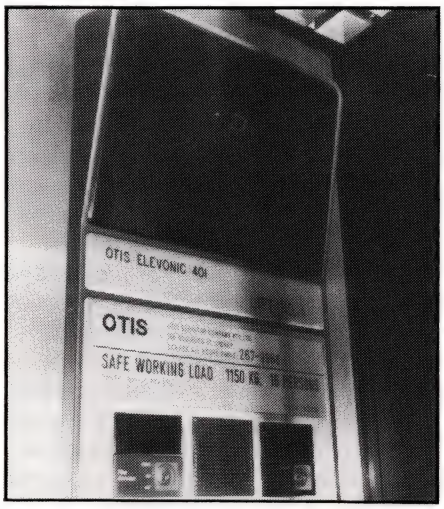
The sheer size of the market for this application provides the impetus and the revenue to push development further. This is about to happen with speech technology. Many people have heard talking cars or refrigerators on television science programs, but have not yet encountered a talking machine in everyday life.

In 1984, many Australians will encounter a talking machine as three companies release products in this country. Minolta has released the AF-Sv camera, Sites Alive has released a promotional device for supermarkets and Otis a talking lift.

The Minolta AF-Sv 35mm camera is being touted as the world's first talking camera. It is an automatic camera that will load, advance and rewind the film, set the correct exposure and focus automatically.

All the user does is insert the film, point the camera and push the shutter release. The speech synthesiser is capable of three sentences.

If there is no film in the camera and you try to take a picture it will say *"LOAD FILM"* If there isn't enough light to take a picture it will say *"TOO DARK, USE FLASH"*.



If the subject is too far away for the range of the flash unit it will say *"CHECK DISTANCE"*. The camera, with case, retails for about $A330, and in the first few days of the camera being available, "talking" sales were running almost 2-1 to the non-talking AF-Sv model.

Melbourne company Sites Alive has developed a controller board featuring a speech synthesiser and proximity sensors for point-of-sale advertising promotions.

The speech synthesiser uses a 64K ROM capable of storing 120 words. The word dictionary and the voice required are created by digitising a recorded voice and storing the words in the ROM chip.

The words are regenerated at a sample rate of 4000 bits a second with another ROM-based program controlling the ordering of the words into sentences. The proximity sensors are used to trigger the speech synthesiser.

The initial application of the device is likely to be in supermarkets, with a packet of breakfast cereal addressing passing shoppers and urging them to pick up particular brands.

Otis has installed the first talking lift in Australia in the Atrium office building in Pitt Street, Sydney. The lift not only features a speech synthesiser but is redesigned completely with digital floor position readout and an expanded control panel.

The lift is part of a new range of software-controlled lifts, where the relay mechanisms used to control the progress of the lift have been replaced by microprocessors. The speech synthesis unit is a standalone Texas Instruments device that can be fitted to any lift.

The vocabulary is determined by the client and male or female voices can be provided.

Companies that want to customise the voice can use a Melbourne company that will create a ROM-based vocabulary from an audio tape. Otis spokesman Paul Bayliss, says the lift has been well received by users, as many people feel that lifts are unfriendly and the voice adds a friendly touch.

The draft handicapped persons code for lifts specifies the use of speech synthesis says Bayliss, who expects the device to be installed in most new lifts.

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Integrated software environments are redefining the user interface. John Markoff and Paul Freiberger look into . . .

Open windows

TWO blocks from the beach, in a cramped office in downtown Santa Monica, California, at Quarterdeck Software, Therese Myers and Gary Pope are putting the finishing touches on DesQ, a software program they claim is destined to fundamentally change the way people will use personal computers.

Four hundred miles to the north, in San Jose, the giant software-publishing house Visicorp has just released Vision, an intergrated software package on which the company has gambled $US12 million and invested three years of research and development time. The Window Wars have begun.

By next Northern summer, dozens of other companies, including Microsoft, the designer of the operating system for the IBM PC, will be trying to convince buyers that the power of their personal computers can be dramatically enhanced with a new type of software that functions as an intermediary between a computer's operating system and its application programs.

Operating environments

Referred to as operating environments, these programs offer new levels of integration among applications and a highly visual manner of interaction with the computer based on pointing and selecting functions with a mouse. The operating environments also allow their owners to work with many applications simultaneously.

During the next year, operating environments will be widely available on virtually all of the most recent generation of 16-bit desktops. Those who have been watching the efforts of these developers say the new software will quickly eclipse cryptic commands as the method of choice for getting the computer to do its owner's bidding.

Operating environments will give personal computers previously unheard-of abilities. Visicorp's president, Terry Opdendyk, says Vision will be able to transfer data from graphs and charts on the screen directly to Query, the company's planned relational database manager.

Users can perform the transfer simply by pointing with the mouse to a window containing a chart and then pointing to the desired spot in the window containing the database. Vision automatically will tell the receiving program the form of the data that is being sent.

Operating environments will use a technique called virtual memory, which will permit the simultaneous use of several programs that would otherwise require more memory than the IBM PC can provide. DesQ, for instance, automatically will open a window and move a program into memory when it is needed, then store it temporarily on the disk when another window and the program are required.

Operators can switch back and forth between windows without disturbing the operation of any programs they contain. This mass shifting of information is performed behind the scenes, with no need for direct human intervention.

Some operating environments will be able to learn to perform repetitive tasks automatically. ConceptVP, an operating environment slated for January release from Scientia in Wellesley, Massachusetts, will include a utiility called a "tape record function" that will remember interactive operations between the user and the computer.

DesQ also will include such a facility, called a "learn facility" or "template builder". According to Pope, the operators can perform repetitive tasks using different data by just pressing one of the buttons on the mouse. Operating environments offer software developers excellent tools that will allow them to take advantage of so-called multitasking operating systems, those that permit the actual execution of several programs at once.

Vision, for example, allows a computer to communicate with other machines or print information at the same time as the user does another task on the screen. This will allow electronic mail or data from an electronic information service to be displayed in small windows to the side of the screen while the user concentrates on a principal application in a larger, central window.

Despite many similarities in the services they offer buyers, the major operating environments were designed with distinctly different philosophies in mind. The developers of DesQ have waged what they say is a difficult struggle to ensure that most software now running on the IBM Personal Computer can be used.

Open systems

The goal, they say, is to allow those programs to operate in the new environment without any changes, "to stay open", Pope says.

Visicorp, on the other hand, uses the term "open system" in quite a different way. Instead of allowing the use of unaltered software with Vision, it has created a software "toolkit" designed to let other companies write new software that will run with its operating environment.

The company initially will release three applications with Vision: Graph, Calc and Word. Query will follow, and several communications packages will be announced next year.

Although the market may view the two products — and their philosophies — as competitors in a battle that only one can win, both Visicorp and Quarterdeck claim not to see it that way. Opdendyk says he feels Vision and DesQ are essentially different products.

Vision, he says, will offer a common user interface from application to application and a degree of integration impossible in an environment that must support diverse existing programs. Quarterdeck, in turn, claims it is not looking at Vision as DesQ's principal competitor, either. In fact, it is looking past Visicorp at another competitor to the north: Microsoft.

Despite disagreements on strategy, the designers of the new operating environments universally agree they owe an intellectual debt to computer

☐ *John Markoff and Paul Freiberger are senior editors of InfoWorld.*

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Open windows

(Continued from page 22)

scientists at the Xerox Palo Alto Research Centre (PARC) in Palo Alto, California. More than a decade ago, PARC scientists designed the first operating environment to use the electronic-desktop concept and display information in windows.

It was developed for the company's Alto computer using an experimental programming language called Smalltalk. The idea of breaking the screen into separate windows is generally credited to Alan Kay, now chief scientist at Atari, who at the time was the head of the Smalltalk group at PARC.

Those following in Kay's footsteps have not found the path to be an easy one. Although Visicorp introduced Vision almost a year ago and set its shipment for early in the Northern summer, delays, debugging and last-minute changes pushed the release date for Vision to the end of October.

The first working prototype was realised on an Apple III, using an Apple II with a graphics tablet as a substitute for the then-unavailable mouse. Early in 1981, three or four months after the Vision project had begun, the first breadboard version of the IBM Personal Computer arrived at Visicorp.

Vision was shaped in an eclectic, almost patchwork fashion as Visicorp tried to focus more on program interaction and uniformity than on the showier windows.

The story at Quarterdeck, by comparison, seems much more the stock tale of Silicon Valley, despite its Southern California genesis.

DesQ began as an empty blackboard in a rented garage in Santa Monica. "We got started by funding ourselves for a year Myers says. "We would write things like, 'the system has to be open.'"

Then, at a certain point, Pope, who was a bright Cal Tech graduate, went off to figure out how to do it. He came back several months later with a development language, which he refers to as Sympl.

According to Pope, Sympl borrows a little from Lips and a little from Smalltalk. The language is itself written in Microsoft Pascal, and Pope says it is an excellent development tool that makes it possible to quickly construct mock-ups and easily change them.

By November last year Quarterdeck had a little funding and a prototype with windows running. That was also the month Myers saw the first public preview of Vision in Las Vegas.

Six months later, in Atlanta, at Comdex Spring, Quarterdeck stole the show. □

Integration . . . or open system?

By John Markoff

JUST as the personal-computer industry hasn't reached a consensus yet on which kind of mice or windows it favors, it also hasn't made up its mind on the questions of what *integration* and *open system* mean.

Window managers are one approach in the most recent effort by software developers to expand the function and power of personal computers by integrating different and often conflicting application programs.

Some developers, such as Lotus Development Corp or Context Management Systems, feel that the best way to integrate applications is to build program integration — the ability to transfer data and use common commands — into the structure of an application itself, which is the so-called all-in-one approach.

Other developers, such as Apple Computer or Visicorp, feel that separate application programs (on different diskettes or different areas of a hard disk) should be given a "universal environment" (called a *window manager*) through which data can be passed and manipulated. Window managers allow personal-computer users to look at several sets of data and programs simultaneously and transfer or translate data.

"Windows were an obvious solution to passing data back and forth," says Therese Myers, president and founder of Quarterdeck Software, designers of DesQ. But what data can be transferred and how it can be moved varies from one window manager to another. From what we saw, the most impressive integration claims were made by Visicorp who told us, for example, that when Query, its relational database manager, is available, the user will be able to select graph, spreadsheet or textual data with a mouse and then move that data simply by pointing to a field in the database.

Visicorp claims that data interchange between Vision applications will be virtually universal. The company is now able to demonstrate data transfer between spreadsheet and graphing programs.

Microsoft, on the other hand, has no application programs ready to demonstrate its program integration, but the company has announced a "data interchange protocol". Windows, its window-manager product, will provide a set of predefined (but extendable) data types that will facilitate data interchange. Initially, these types will include Uninterpreted Binary, Ascii text and Sylk Microsoft's data-exchange protocol for Multiplan.

Software developers will be able to add customised interchange protocols for their own programs. Microsoft uses two different techniques for communicating between windows. These techniques supply windows with "intelligence" that allows different windows to query each other to see if something has happened in another window that they should be aware of.

Ultimately, this should mean that Microsoft Windows is able to attain the same level of "tight integration" demonstrated by Vision. Other window managers, such as DesQ, ConceptVP and Inview, achieve "loose", or less intelligent, integration by translating data between incompatible programs.

DesQ, for example, can either transfer data directly by copying it from RAM or in a more complex fashion by using a "learn facility" which interprets data types from each program. Openess also means different things to different manufacturers. Vision is perhaps least open, requiring that software developers engineer programs for Vision on a Vax minicomputer.

Microsoft says that MS-DOS-compatible programs will run under Windows, but admits that programs must be redesigned to take advantage of Windows' special functions. Quarterdeck says that a majority of the programs written for MS-DOS will run with DesQ without modification. In addition, the company will offer development tools for users that will allow the creation of pop-up menus for individual program functions.

Microsoft opens MS-DOS windows

A LEADING software company has opened a second front in the developing window wars. Less than two weeks after Visicorp started shipping its long-awaited Vision integrated software package, archrival Microsoft has fired an answering volley by introducing a lower-cost window manager with new features that both users and applications program developers will love.

On November 10, in New York, Microsoft announced Windows, a window manager and graphical-device interface designed to integrate applications software running on the IBM Personal Computer and IBM PC-compatibles. Microsoft is billing Windows as an extension of the MS-DOS operating system.

Window managers generally convey the metaphor of a desktop environment — stacks of paper on the desktop with a filing cabinet and wastebasket close by. Microsoft's announcement drew together many IBM PC-compatible hardware manufacturers, including Compaq, Hyperion, Texas Instruments, Hewlett-Packard, Eagle, Zenith, Burroughs and Digital Equipment Corp.

The product also received blessings from manufacturers planning to introduce IBM PC-compatible machines shortly, including Apple Computer, Radio Shack and Mindset. One corporation is conspicuously absent from the list of supporting hardware manufacturers — IBM itself.

Because Microsoft developed the operating system (MS-DOS) that IBM has blessed for its Personal Computer, whether IBM plans to support Windows is a touchy subject for Microsoft. Company officials had no comment on IBM's plans to adopt Windows, but said it would be available on the IBM PC when the program was shipped.

Microsoft says it will ship Windows to dealers in April (although development on a product like Windows is difficult to predict and may take longer), priced between $US100 and $US250. Software publishers who've announced plans to offer application programs running under Windows include Lotus Development Corp, Ashton-Tate, Software Publishing Corp and Software Arts.

Microsoft also said it planned to modify its own applications, such as Multiplan and Microsoft Word, so they would work under Windows. The announcement of support from other software publishers appears to give Microsoft a significant advantage in the race to provide integrated software for second-generation personal computers.

As well as the window manager, Windows will include Microsoft's Graphics Device Interface (GDI), which would make it easier for software developers to make their application draw a line or scroll on the screen.

With Windows, Microsoft is claiming that software-application developers will be able to write programs without worrying about specific features of the hardware and that programs written to run under Windows will be portable to any personal computer that supports Windows. Microsoft also is making a strong commitment to bit-mapped graphics and the use of the mouse pointing device with the introduction of Windows.

Microsoft claims Windows will work on personal computers equipped with two floppy-disk drives and as little as 192K-bytes of RAM. Software development is such that it is diffuclt to predict exactly how a product will come out when it's finished. Visicorp, for instance, claimed when it announced Vision a year ago, that it would be able to run on two floppy-disk drives.

Only recently did the company find that it couldn't make the product work without a hard-disk drive system.

One simple program that will come with Windows is a "visual shell" intended to insulate users from some of the complexities of the operating system. A visual shell is a menu of options that allows you to select operating-system commands by pointing at them.

One piece missing from the puzzle so far is MS-DOS 3.0, the long-awaited, multitasking version of Microsoft's operating system that allows you to run several programs or tasks simultaneously. Microsoft clearly has designed Windows to take advantage of multitasking — all the partitions or windows in the program are active at the same time.

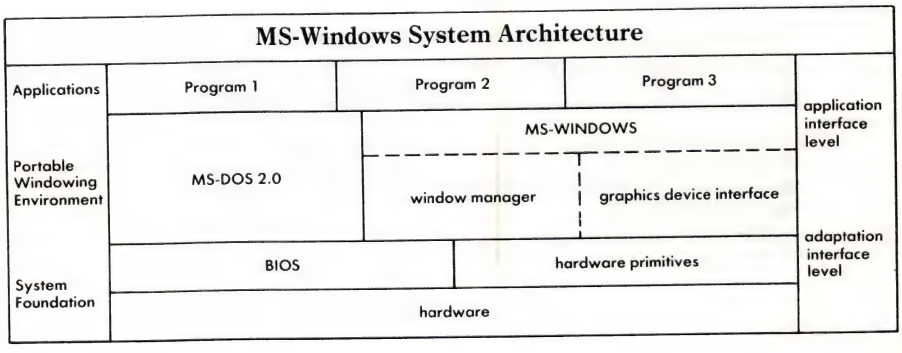
Microsoft refused to comment on when the new version of MS-DOS would be released. Although Microsoft went to some pain to emphasise that Windows is an "open system", it had to admit that third-party software must be "well behaved" in order to reside in an individual window on the screen.

According to Jerry Dunietz, Microsoft systems-software engineer, programs that circumvent MS-DOS, such as Lotus 1-2-3, will not run inside the window manager. Dunietz referred to these as "misbehaved" programs and admitted that a significant portion of MS-DOS software falls into this category and that such programs would use up the entire screen, instead of appearing in a window.

Microsoft's Windows constitutes a noticeable departure in appearance from other window managers previously introduced. The Xerox Star, Apple Lisa and window managers for the IBM PC, such as Vision, DesQ, Concept VP and Inview, all permit overlapping windows with each displaying different programs or documents.

But Microsoft has chosen a 'tiling' approach to windowing. In a tiling approach, the screen display is divided into columns, and the columns are broken into windows.

Windows has a built-in "automatic window layout" feature that resizes all the windows when the size of any one window is altered, so that the windows never overlap. When one window is placed on top of another window, the covered window is instantly transformed into a pictorial representation or icon, and displayed at the base of the screen □



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Five CP/M word processing packages

In a two-part series, Dr William Hall reviews Wordstar, Select, The Final Word, Perfect Writer and Spellbinder

Introduction:

I HAVE read too many reviews of word processing systems written by people with only limited experience in the area of word processing. Friends have also told me that XYZ word processor won't handle a particular problem well, when the basic problem is that they haven't taken the time to learn to use all its features.

Let's face it — the more flexible and powerful a word processing system is, the more commands it will have, and the longer it will take to learn all its commands effectively.

Given these circumstances, I thought it was time for me to offer my experiences on the several packages I have used.

My opinions are based on nearly three years experience using my computers for writing original manuscripts and operating a part-time word processing bureau. I also have taught word processing for a year.

Copy processed by my bureau ranges from technical theses requiring many complex formulas, tables and changes in type font, to financial accounts and the merge printing of standard business documents.

Our courses have ranged from custom tutorials for single executives to month-long training programs designed to help unemployed people gain computer skills.

In this article I survey Perfect Writer, Select, Spellbinder, The Final Word, and Wordstar.

For each program, I pay particular attention to the ease with which it can be learned, the scope and power of its editing commands, its capabilities for formatting the output, the ergonomics of its command structure: as controlled from the home keys or programmable function keys, and special advantages for particular kinds of typing.

Various problems encountered in installing the programs for various printers and in transferring text files among them will also be discussed. No one program is superior for all applications, and each has at least one application where it is clearly better than the others.

Before reviewing the programs individually, I offer some general comments on aspects of the interface between these programs and the user. To date, most users have paid far too little attention to how they interact with the computer once the program has been mastered.

Ergonomics

"Ergonomics" and "user-friendliness" are industry buzz words referring to important characteristics which should be examined carefully before selecting any computer or word processing system. "Ergonomics" is concerned with the efficient and economic use of human energy in achieving specific tasks.

When applied to word processing, ergonomic systems allow the operator to process a given text with maximum speed while reducing keystrokes, errors and physical or mental strain.

Traditional computer keyboards (and typewriters before them) offer two excellent examples of bad ergonomic design: One is the QWERTY layout of the alphabetic keys which deliberately places commonly used characters away from home keys and under weak fingers (this was done early in the history of the mechanical typewriter to slow typists down to what were then the limited capabilities of the mechanism).

The other, and more specific, fault of the computer is placement of the control ⟨CTRL⟩ key. In the review I note how each program exacerbates or improves these faults.

The CP/M operating system and many word processing programs running it make heavy use of ⟨CTRL-CHAR⟩ where ⟨CHAR⟩ is the alphabetic key pressed while the control key is held down) keystroking patterns to distinguish commands to the computer from keystrokes to be entered into text.

Touch-typing primarily involves a linear sequence of single finger keystrokes based on short reaches away from the fingers' normal resting positions on the "home" keys (A,S,D,F) for the left hand, and (J,K,L,;) for the right. Any keying operation which breaks this sequence of single short keystrokes will substantially reduce typing speed, eg, like those of entering a control character or using the shift key for capitals.

Shifting is less disruptive than using the ⟨CTRL⟩ key because it normally occurs just after the end of a sentence, coinciding with a natural pause in thought. Shifting is also facilitated by the shift keys' large size, duplication, and placement close to the home keys, which allows one hand to hold shift while the other hand types the shifted character.

(In passing, I note IBM's incredibly bad design decision on the PC to place an additional character key between the left hand home keys and the shift key.)

By contrast, the ⟨CTRL⟩ key is usually one of the smallest keys on the board and is placed at the left edge far away from the home keys. This guarantees that the left little finger — normally the weakest and least controllable — is the only one that can reach it unless one or both hands are taken away from the home keys.

Programs like Wordstar make this bad ergonomics even worse by using ⟨CTRL-CHAR⟩ commands and requiring awkward extensions like ⟨CTRL-P⟩, ⟨CTRL-Q⟩, ⟨CTRL-K⟩ and ⟨CTRL-O⟩ as prefixes for many commands.

User friendliness

" User-friendliness" refers to the conceptual (as compared to ergonomic) ease with which users can interact with a computer program. Several components are important.

■ **Documentation:** Every word processing system comes with supporting documents to explain how to install it on

the host computer, and provide details on its features. The documentation is extensive and complex for all programs reviewed here. How accessible and understandable is this documentation?

■ **Tutorial material:** Most people who use computers learnt to use a keyboard on a typewriter, yet WP operators must interact with the system in a totally new way. Typists execute most formatting operations using eye and muscle co-ordination to physically move the paper around in the machine before pressing keys to type the characters.

The only "function" keys are the mechanical ones of shifting, tabbing and using the carriage return to advance the paper. By contrast, computers work with encoded instructions.

This requires typists to make conceptual shifts in the way they control formats — and given that no two WP systems encode their instructions in the same way, even shifting between different WP systems can be difficult. An important component of user-friendliness is how much help the packages' training and tutorial materials provide towards learning the commands.

■ **Online help:** WP systems require a wide range of commands to perform functions typists used to do manually. Thus, even after they are understood, memorising the commands well enough for speed typing can take some time.

The packages reviewed all offer on-line "help" — from memory joggers optionally or permanently displayed on-screen to fairly extensive explanations that can be readily called up from the keyboard. How much help do these provide and how easy are they to use?

■ **Command structure:** Are commands logically organised on the keyboard or do they work in ways contrary to intuitive thought processes?

Some examples illustrate what I mean:

- All the programs except Select place at least one cursor movement key next to a delete key, virtually ensuring that a missed cursor stroke will delete portions of text. Unfriendly.
- Perfect Writer and The Final Word both use highly verbose formatting instructions. Some require up to 15 or more keystrokes — which must be 100 per cent accurate to be recognised.

That is bad enough — but neither program gives the operator any hint while typing as to what effect (if any) the instruction will have on the output. The document must be saved to disk, then formatted and printed with different program modules before the effects of the instructions can be tested to see if they were entered correctly.

- Select, Spellbinder and The Final Word have alternate modes — a text entry mode and at least one kind of command mode The computer is left in the specified mode until specifically instructed to change.

The same keys are used for sometimes very different functions in different modes. If one forgets which mode is operational, quite unexpected or catastrophic results can ensue.

I prefer those systems where a given sequence of key strokes always does the same thing. With these I can concentrate fully on my work at hand and let my reflexes handle the typing on their own.

- Perfect Writer offers another example of unfriendly organisation. Aside from the verbosity of its formatting instructions, commands use five quite different keystroking patterns: ⟨CTRL-X⟩ ⟨CHAR⟩, ⟨CTRL-X⟩ ⟨CTRL-CHAR⟩, ⟨ESC-CHAR⟩ and ⟨ESC⟩ ⟨CTRL-CHAR⟩.

Similar functions are usually grouped according to the SECOND keystroke, and not according to the prefixed strokes — making them much harder to memorise.

Confusing codes are exacerbated by differences in the keystroking dynamics: ⟨ESC⟩ sequences require the escape key to be released before making the following keystroke, while ⟨CTRL⟩ sequences require both keys to be held down simultaneously.

Software may be brilliant in conception, but most people prefer programs that make work flow more easily and smoothly — not a brilliant one that unexpectedly deletes blocks of text because a keystroke is missed or an unhelpful program that has a difficult-to-master command structure. Programmers and marketing people please take note.

■ **Function keys:** Some programs and/or computers offer opportunities to alter an ergonomically bad command structure by programming at least some commands onto labelled function keys. This customisation is usually left to the end-user, and requires more technical understanding of the computer hardware-software system than most new users would have.

In some cases, the hardware supplier or dealer already has done it —not necessarily considering the ergonomics. I include some comments on how I have set up those programs which benefit most from customisation.

The test environment

My experience with the five word processing programs varies. I obtained Wordstar with my first CP/M computer in November 1981, Spellbinder in April 1982, and Perfect Writer and Select with a Kay Pro II in January 1983. The Final Word was provided recently for incorporation in this review. Where there are significant differences between versions of the programs — I have used, these are noted.

All programs except The Final Word have been used on Kay Pro transportable computers (II and IV). All except Perfect Writer have also been run on an older single-board computer based on the Ferguson Big Board. Both computers use the 8-bit CP/M 2.2 operating system and offer 64K-bytes memory, two disk drives and an 80-col by 24 line screen display offering no highlighting or character enhancements.

Both emulate the popular and uncomplicated ADM3A terminal. The Kay Pro offers 18 programmable function keys which easily can be configured to improve the ergonomics of several of the word processors.

All programs have been used to drive a C. Itoh daisywheel printer and various dot-matrix printers. The C. Itoh emulates the Diablo series of daisywheel printers, and provides for fractional spacing of lines (1/48in) and characters (1/120in).

The dot-matrix printers used include two different C. Itoh models plus several brands emulating the Epson MX80. I have encountered several other printers working with one or more of these programs in custom tutorial situations.

The software

To emphasise functional similarities, I treat the five packages in three groups: The Final Word and Perfect Writer are similar in many ways and share an obvious common ancestry as well an unjustified egotism about their capabilities as expressed in their names (I understand that they are both scaled-down versions of a mainframe editing program).

Select and Spellbinder both use a mode shifted command structure, but differ in many other ways. Wordstar has the longest history of usage on personal computers and is still the program against which the other are compared, so I will begin with this.

All of the programs use disk space for virtual memory to allow much longer files to be handled than will fit in the available random access memory. Some handle this better than others.

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WORDSTAR

Wordstar, one of the oldest and most popular word processing packages for CP/M computers, is published by MicroPro, and is distributed in Australia by Imagineering as well as being bundled with particular brands of computers. Associated programs integrated with Wordstar include Mailmerge and Spellstar.

Several other Micropro packages are reasonably compatible: Datastar (a sophisticated data entry program), Supersort (a powerful sorting utility), Infostar, and Calcstar (a spreadsheet program). Despite considerable experience with three of the other packages under review, Wordstar is still my preferred program for general use and would certainly be the first choice for any statistical or technical typing involving tables, formulas or other complex formatting problems.

Wordstar's major strengths are in ergonomics, user friendliness and user control over all printer functions except proportional printing.

The package

The basic package includes three modules which must be accessible on disk to operate properly:

- WS.COM (if already installed for a particular computer such as the Kaypro) or WSU.COM (uninstalled version) — the master program;
- WSOVLY1.OVR — machine language subroutines for less frequently used functions (read into memory as needed but otherwise leaving space available in a 64K RAM for a large amount of text — about 24,000 characters or about 10 pages).
- WSMSGS.OVR — text files for the extensive help messages.

The current package includes at least two installation files, WINSTAL.COM and WS.INS which allow even inexperienced users to install WS.COM for a wide range of different hardware and default conditions. Older packages include a much more compact and less user friendly INSTALL.COM.

These can be removed from the working disk once installation is complete. Wordstar optionally includes MAILMERG.OVR to enable merge printing and various files associated with Spellstar.

Mailmerge is a powerful utility which can be used for a wide variety of functions beyond simple merge printing. I have little experience with Spellstar, since other proof reading systems such as the WORD+ work with Wordstar, are easier to use and more powerful.

Versions

The three versions I have used (2.10, 3.00, 3.30) differ considerably in their capabilities: Version 2.10 lacks the ability to move columns of text (a disadvantage) and does not offer horizontal scrolling (I regard this as a major asset — I still use 2.10 for all but tabular typing in preference to the newer versions). Text lines displaying more than 79 characters are wrapped around onto the next screen line so that all characters held within the file space displayed on the screen are visible at once.

The maximum length of a text line is 240 chars.

All Wordstar's flags in column 80 are also displayed. These indicate the type of line ending (soft return, hard return, line wrap, or screen lines before or after the file space) or whether Wordstar's formatting instructions are to be recognised.

Version 3.00 offers horizontal scrolling (lines do not wrap around if longer than 79 characters — they simply disappear off the edge of the screen). Lines of more than 80 characters may be typed or followed with the cursor to force horizontal scrolling in 20 character jumps.

When one is working with text lines of more than 79 characters, it is impossible to see all of the text at once. Also, when the line ending is off screen, the only flag displayed for that line is the '+' which indicates the line is continued off screen.

Horizontal scrolling is advantageous only for tabular typing. For most other kinds of editing it is quite detrimental to have parts of the text invisible off screen.

Ideally, horizontal scrolling should be an on-screen formatting option. An important addition to 3.00 is the provision of a column move capability.

Installation

Installation and documentation for 2.10 and 3.00 are similar in style with the addition of a training manual in the later version. Version 3.30 differs from 3.00 primarily in that its installation program is far more sophisticated than the earlier versions.

New users will find it far easier to install a wide range of printers and set a variety of default parameters for printout style and operation of the program. It also offers another improvement I would very happily do without.

The version distributed with Kaypro automatically patches the Kaypro operating system with its own cursor control codes. As discussed below, Kaypro's own keypad configuration program allows even inexperienced users to set up a better ergonomic key stroking pattern which uses the linear row of four cursor keys to put ⟨CTRL-CHAR⟩ prefixes within touch typing range of the keyboard and transfers cursor control to a more logical diamond shaped pattern on the numeric keypad. Spatial relationships of the cursor keys should correspond to the direction of cursor movement. The new version defeats this — at least as far as the four cursor keys are concerned.

As installed, Wordstar occupies between 67 (version 2.10) and 81 (version 3.30) kilobytes of disk space, depending on the version. Unlike Perfect Writer and The Final Word, Wordstar requires no reserved disk space for text files that overflow the available memory space.

One or more scratch files are created automatically, only as needed — and their size depends entirely on the size of the text being edited. Next to Spellbinder, Wordstar uses the smallest amount of disk space of the five systems.

The user interface

A new user may choose to interact with Wordstar through a complete heirarchy of menus with a NO FILE or OPENING menu, MAIN EDITING MENU and PREFIX MENUS summarising five sets of commands which take prefixes and a variety of additional help messages for commands requiring extra specifications before acting.

If this isn't enough, optional explanations and help may be called up independently of the execution of particular commands. In Wordstar *all* options available to the user at any given point in processing a document or executing a particular command are displayed — every step of the way.

Experienced users may dispense with some or all of this help, and type in commands with no delay in action.

Opening menu

When Wordstar is loaded into memory, the 'NO FILE' or 'OPENING' menu is displayed after the initial installation and copyright notices are displayed to the screen.

One also returns to this menu when

editing is completed. The Opening Menu offes a choice of two editing modes that differ in initial settings for onscreen style, but use the same main editing menu commands;

The document mode assumes that fractional space justification, soft returns, variable tabs, line wrap, automatic hyphenation, etc, will all be used;

The non-document mode enters only standard Ascii tabs and characters into the file being typed. The Opening Menu also gives access to other functions and housekeeping utilities: displaying the disk directory; logging another disk drive; deleting, renaming or copying disk files; setting the initial help level; normal or merge printing; running another program (Wordstar saves user style settings while running other programs); and exiting to the operating system.

Main menu

The main editing menu offers about 20 prompt commands and access to five extra menus of commands beginning with a prefix. Wordstar uses only two types of instructions:

- Prompt commands for cursor movement, deleting, other editing operations, and for manipulating other files.
- Instructions inserted into the text to control the printout. All prompt commands are entered as one or two ⟨CHAR⟩s.

Instructions for print enhancement (e.g., different pitch, bolding, underlining, ribbon color, etc.) are typed into the text as ⟨CTRL-P⟩ ⟨CTRL-@⟩ which inserts the designated control code into the text (i.e., hexadecimal codes 01 through 1A, which display on the screen as 'Cont X' where X is an Ascii letter character). Dot commands are typed in as text lines beginning with a '.' (full stop) in Column 1, followed by two letters and (optionally) a modifying number or word.

There are no major mode shifts. The Opening Menu offers access to non-editing utility functions.

In the Main Editing Menu, once a control code is entered it may be aborted or must be carried to a conclusion. A given keystroke command always means the same thing in Wordstar.

The only function resembling a mode shift is the insert toggle, ⟨CTRL-V⟩. When insert is toggled on (the normal situation), any characters typed are simply inserted into the text at the cursor position.

When toggled off, they replace existing characters in the text —useful in some editing situations. Single mode systems are best for composing text.

One can concentrate on writing the text without having to stop and think about what mode one is in or how this effects the meaning of command keystrokes.

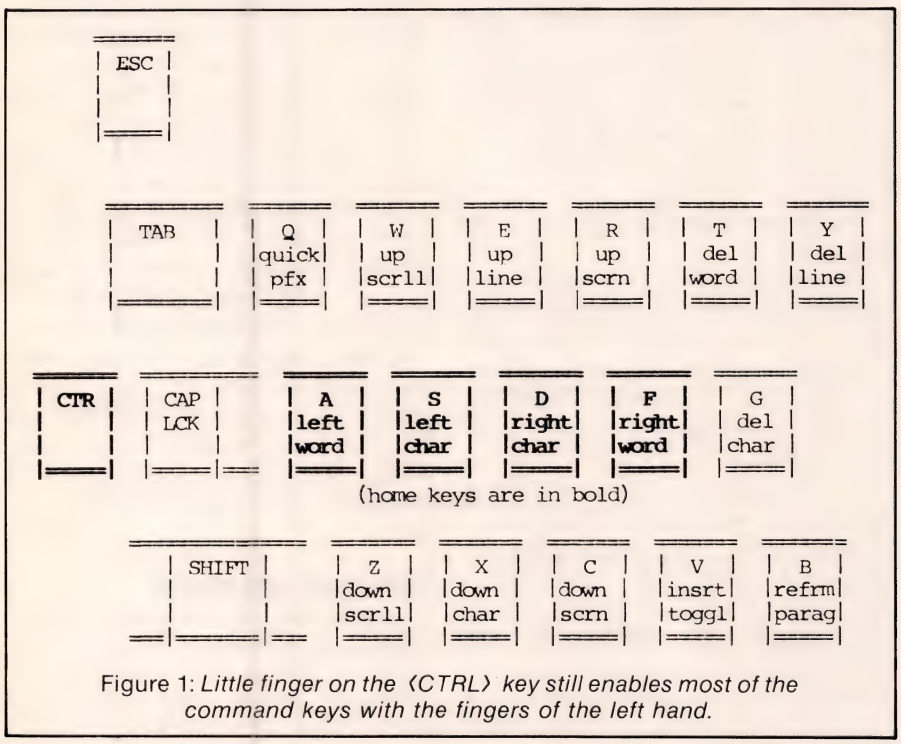


Figure 1: *Little finger on the ⟨CTRL⟩ key still enables most of the command keys with the fingers of the left hand.*

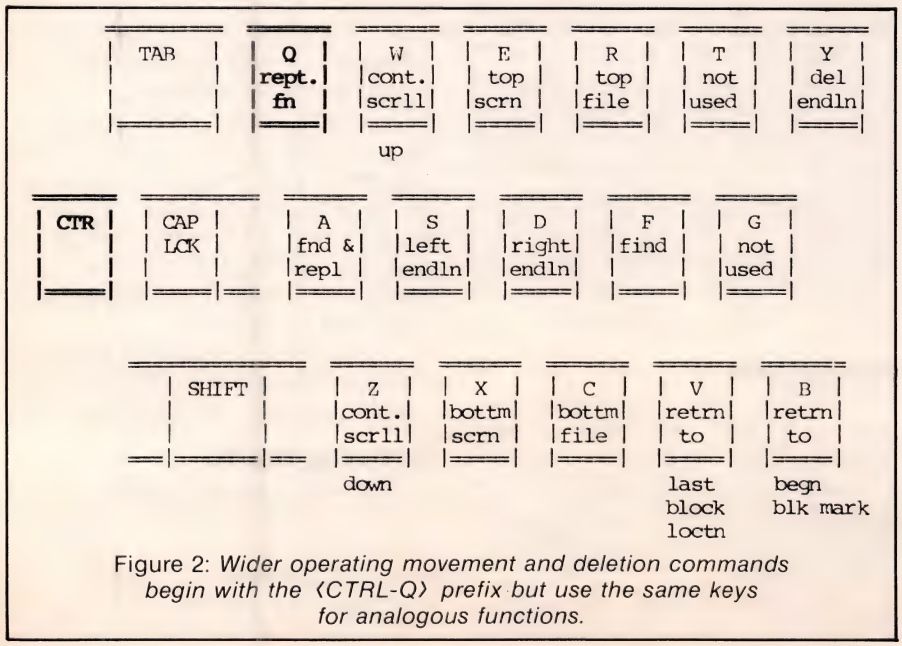


Figure 2: *Wider operating movement and deletion commands begin with the ⟨CTRL-Q⟩ prefix but use the same keys for analogous functions.*

Ergonomics

MicroPro has given considerable attention to organising Wordstar's commands into ergonomic and intuitively logical groupsings. The other packages have all taken what I would call a sales-oriented approach to their command structures, by picking keys that use initial letters of command names.

These may be easier for a new user to remember, but the keystroking is usually quite unergonomic and does nothing to help an experienced user get the work done faster, no matter how easily remembered the commands may be. Wordstar's commands aren't easy to remember, so, to compensate, it offers by far the best onscreen help to the user.

Keystroking without dedicated function keys

In Wordstar, the most commonly used cursor and editing commands are executed as a single ⟨CTRL-@⟩. Many

more, but less frequently used commands require a ⟨CTRL-@⟩ prefix. These are grouped under five prefixes:

- ⟨CTRL-O⟩ commands are generally quicker or more extensive versions of single keystroke cursor movement, deletion plus finding and replacing and quick access to various kinds of place markers (e.g., more sophisticated cursor movement commands).
- ⟨CTRL-O⟩ gives access to ⟨O,n=⟩ screen formatting commands and toggles — most of which are reflected in the printout (e.g., toggling word-wrap, hyphenation, etc., and using and setting margins, tabs, line spacing, etc.)
- ⟨CTRL-K⟩ commands cover blocks of text and other files (eg., inserting other files; marking, moving, writing and deleting blocks of text; copying and deleting other files, etc.).
- ⟨CTRL-P⟩ enters various ⟨P⟩ rint enhancements into the text (eg, bold-facing, underlining, overstriking, etc.).
- ⟨CTRL-J⟩ allows users to determine how much of Wordstar's extensive on-screen help facilities are displayed, and access to the detailed explanations.

Wordstar accepts upper and lower case letters and ⟨CTRL⟩ as the second keystroke in prefix commands. This is advantageous when one is using cursor controls to scan text.

The cursor key is simply held down while the appropriate first and second keys are struck. At other times it may be easier not to hold the cursor key down through a sequence of commands. Similarly, the state of the shift key has no effect on the meaning of control commands.

Given the awkward location of the ⟨CTRL⟩ key on most keyboards, Wordstar's control of cursor movement and deletion is very well designed. Most primary editing functions are placed on the left hand keys and can be reached with the index finger while the little finger holds down the ⟨CTRL⟩ key, as illustrated in figure 1.

The diamond-shaped arrangement of the keys E, S, D and X serve as directional arrows for single character cursor movements.

These directional relationships are maintained in other more extensive commands. A finger motion upward on the keyboard corresponds to up on the screen, left to left, and so on.

More powerful or longer reaching movement and deletion commands begin with ⟨CRTL-Q⟩ prefix, but in general they use the same letter keys for functions analogous to those entered as single ⟨CTRL-@⟩ commands: ⟨ESC⟩ ⟨CTRLQ,N⟩ — where N is a number O through 9 moves cursor to one of 10 different non-printing place markers which may be placed in the text.

Even without dedicated function keys, typing and correcting with Wordstar is very easy. Text is entered naturally without consideration of alternate modes, and movements and deletions for corrections are easily made with the single ⟨CTRL-@⟩ commands on the left hand — thus requiring only minimal movements away from the home keys.

Keystroking with dedicated function keys:

Many computers provide special keys which can be programmed to generate control codes or strings of characters used as commands by applications software packages. These 'dedicated function keys' can be configured to further improve the ergonomics of Wordstar's keystroking patterns. Kaypro provides a configuration program (CONFIG.COM) which readily allows the user to set the four cursor keys and 14 keys of the number pad to generate any Ascii character.

The configuration is patched into the computer's operating system, not into the WP program.

Since the control characters ⟨CTRL-A⟩ through ⟨CTRL-Z⟩ occur alphabetically in the hexadecimal sequence 01 through 1A, any user can easily set Kaypro's numeric and cursor keys to generated any @ combination, as illustrated in figure 3 for my configuration of Wordstar.

In this configuration, most control functions can be executed by striking a single key (or a sequence of two single keys) rather than the sometimes very awkward two finger reaches required for ⟨CTRL-@⟩ strokes.

Cursor keys are set for three main prefixes plus ⟨CTRL-B⟩ ⟨CTRL-B⟩ alone is the command for reforming paragraphs to new margins, while when typed after the ⟨CTRL⟩ prefix it marks the beginning of a block of text. On the numeric keypad, the quick prefix key is placed on ⟨5⟩, with ⟨4⟩, ⟨8⟩, ⟨6⟩ and ⟨2⟩ representing the four directions of cursor movement, with other commands similarly placed according to their direction of action.

If the Qquick prefix key ⟨CTRL-Q⟩ is pressed the functions on the number pad become:

User friendliness

Wordstar offers a number of advantages for a new user. Undoubtedly, its extensive command structure is not easy to memorise.

Keystroking patterns chosen because of their ergonomic utility do not correspond to the initial letter of the function they execute.

On the other hand, Wordstar offers the most extensive and informative on-screen help facility of any of the programs. How much of this help is actually displayed is entirely under user control.

Experienced users can turn off the help to display the maximum amount of text on the screen. On the other hand, new users can request the display of menus summarising every command which can be executed at any point in the text entry, editing or printing stages.

More detailed explanations of many functions and applications, and a summary of Wordstar's many dot commands are also available through the

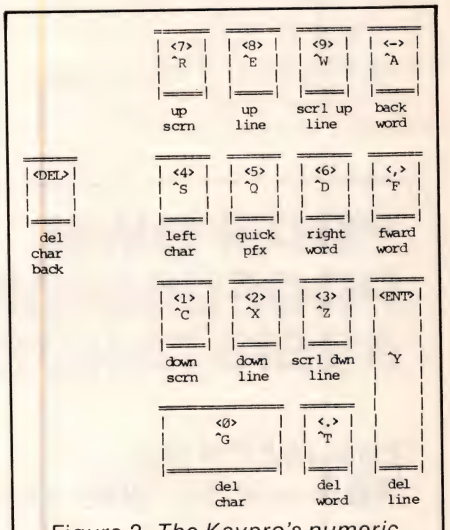


Figure 3. *The Kaypro's numeric Keypad configured as function keys.*

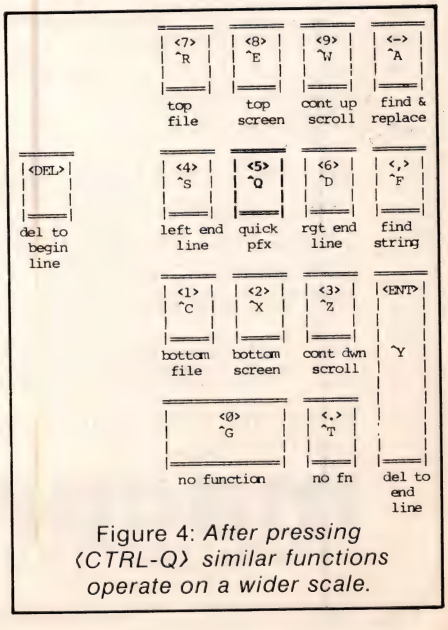


Figure 4: *After pressing ⟨CTRL-Q⟩ similar functions operate on a wider scale.*

help menu. Wordstar's technical manuals offer a great deal of information about the programs, but are not readily understandable by people without computer experience.

Wordstar also offers a training manual of exercises, which provides a good introductory tutorial to the system. Two excellent books by independent publishers provide better introductions to use of this program (Sybex and (Osborne-McGraw Hill).

Another aspect of user friendliness Wordstar offers is that the display of text being edited on-screen closely reflects the printed page. Wordstar advertises that "what you see is what you get".

Although not precisely true, if page formats are not changed with dot commands in the middle of the document, the screen will accurately display line and page breaks. Of the other programs, only Select provides this information during editing.

Print editing and formatting:

Wordstar's tabbing functions are superior to those of the other programs. Margins and tab stops are easily set and changed with ⟨CTRL-O⟩ commands much as they are on a typewriter.

Lines may be up to 240 characters long, with any number of tabs set anywhere in this length. Tabbed text may be either aligned on the initial character or on a decimal point, depending on the character entered into the ruler line which displays on screen the current tabs and margins.

To save the tabs and margins along with particular file, the ruler line may be typed into the top line of text and saved to disk as a non-printing comment line.

When the text is read back into memory, and the cursor moved to the ruler line, the margins and tabs can be transferred to the computer's ruler line by using the onscreen command ⟨CTRL-O⟩ ⟨F⟩ ("margins/tabs from file line").

Tabs and margins can also be entered ⟨CTRL-O⟩ ⟨I⟩ ⟨ column#⟩ — or ⟨CTRL-O⟩ ⟨N⟩ ⟨ESC⟩ for the cursor colmn or all at once ⟨CTRL-O⟩ ⟨N⟩ ⟨A⟩. Wordstar's block and other file commands are powerful and easy to use.

Block commands

During editing, up to 10 place markers may be inserted as desired into the text by typing ⟨CTRL-K⟩ ⟨#⟩ where #=O,1...,9 (these display on the screen as ⟨#⟩). The cursor can be quickly returned to a place mark by typing ⟨CTRL-Q⟩ ⟨#⟩.

Place marks are not saved when text is written to disk. Only one block can be marked at a time.

⟨CTRL-K⟩ ⟨B⟩ (displaying as ⟨B⟩ in the text) and ⟨CTRL-K⟩ ⟨K⟩ (displaying as ⟨K⟩) respectively mark the block's beginning and end (on computers that offer highlighting or inverse video, the marked block is shown highlighted or rather this is indicated with the block markers). Once the block is marked it may be moved, deleted, written to a disk file, or copied within the text using other commands from the ⟨CTRL-K⟩ menu.

There is no size limit for blocks to be erased or written to disk, but only about

4000 characters can be moved or copied as a block within memory. (If you want to move a larger block, write it to disk, then read it back into the text being edited at the destination.)

In Wordstar Version 2.xx the block must include all text between the beginning and end markers. Version 3.xx offers an alternate column mode for moving, deleting or copying columns of text (a column cannot be written to disk).

With respect to columnar texts, the only feature Wordstar 3.xx lacks that can be found on the better dedicated word processing systems is the ability to centre text within designated columns. Wordstar also has the capacity to manage other files and other disks during the editing process.

The block prefix menu provides additional utilities for changing the logged disk drive, reading disk directories, reading into text from other files, copying other files, renaming them, or erasing them, and saving or abandoning the file currently being edited. In fact, the only functions which cannot be executed while editing a file are running another program or simultaneously editing another file.

Search and replace

Search and replace functions in Wordstar are also excellent. ⟨CTRL-Q⟩ finds, while ⟨CTRL-Q⟩ ⟨A⟩ finds and replaces. Search and replace strings may be up to 30 characters long.

The search string may also include Wordstar's special find characters: ⟨CTRL-A⟩ (match any character), ⟨CTRL-S⟩ (match any non-alpha character), ⟨CTRL-O⟩ (match any character other than 'x') and ⟨CTRL-N⟩ (match end of line).

About the only oversight in Wordstar's outstanding on-screen help is the failure to include any help on the special find characters. Options include ignore case (prior capitalisation is also ignored in the replace operation); global, forward or backward search; replace without asking, repeat # of times; and limit search to whole words.

⟨CTRL-L⟩ repeats the previous search and replace operation. The only features which might be added to future versions of Wordstar would be:

- An ability to ignore the unpredictable number of spaces or carriage returns that are inserted between words when text is right justified.
- To sense existing capitalisation and replace accordingly.
- A search elipsis function that can find a string given beginning and ending characters, irrespective of the number of intervening characters.

Filenames or character strings used in previous file management commands or search and replace functions can be restored to the command line simply by typing ⟨CTRL-R⟩ after typing the control characters for the command itself. Printing can be executed from either the Opening Menu directly or in background from within the Block Menu.

Printing

Printing is always from a disk file and can be carried out on a time share basis while another file is being edited. Keyboard input has priority over printer output, which means that simultaneous printing and editing is quite practical on serial printers, with the proviso that some input characters may be lost if typing continues while the disk is being read for printing (Wordstar displays a WAIT message).

(Serial printers accept characters on a serial basis; ie, one by one — not to be confused with the RS-232 serial interface. Most daisywheel printers are serial printers.) Background printing on "line" printers is more problematical.

Line printers are those that accept a whole line of input at once.

Many dot-matrix printers are line printers where, it takes a significant time to output the line to the printer, and printer output retains priority until the output is complete.

It becomes possible to overflow the input buffer and the unpredictably long delays in screen updates can be exceedingly distracting.

Page formatting

Output formatting and print enhancements are controlled through the ⟨CTRL-O⟩ ⟨Q⟩ ⟨n⟩ Screen and ⟨CTRL-P⟩ ⟨P⟩rint Menus, plus a variety of "dot commands".

Using the ⟨O⟩ ⟨n⟩ screen menu command ⟨CTRL-O⟩ ⟨S⟩ ⟨#⟩ (# = 1,2,...9), line spacing can be set for anything from one to 9 spaces between lines. Height of a single line can be changed anywhere in the text with the dot command, '.LHn', where n is the number of 1/48in desired between lines.

Print formatting and page breaks are adjusted accordingly on the printout, but, unfortunately, page breaks displayed on screen are not recalculated for line height changes made within the text. (Wordstar displays a warning to this effect whenever a dot command is entered that would affect the page breaks).

But, many of the same effects may be achieved with a proper display of page breaks if the line height is set to the smallest increment used at the start of the file and ⟨CTRL-O⟩ ⟨S⟩ ⟨#⟩ used to vary the line spacing as desired. For instance, in manuscript typing the main text is usually typed double-spaced, with long quotations set at 1½ spacing.

To enable this without confusing the page breaks, set .LH = 4 (½ the usual line height) and type the main text quadruple spaced ⟨CTRL-OX ⟨SXX4⟩ and quotes in triple spacing ⟨CTRL-O⟩ ⟨S⟩ ⟨3⟩. This procedure works well with other word processing systems that allow one to set line heights independently of line spacing.

Dot commands may be used to force page breaks either absolutely (.pa) or conditionally if less than n lines remain before the natural page break (eg, to prevent only one line of a paragraph continuing on the following page).

Character formatting

Character spacing can be changed even within a line by the ⟨P⟩rint menu commands, ⟨CTRL-P⟩ ⟨CTRL-A⟩ (alternate pitch) or ⟨CTRL-P⟩ ⟨CTRL-N⟩ (⟨N⟩ormal pitch).

The pitch (or character width) determined by each command is adjustable using the dot command '.CW n', where n is the desired width in 1/12in. Underlining, double striking, boldfacing (=shadow printing), ribbon color and various overstrike or strike-out enhancements of the print are controlled with various ⟨CTRL-P⟩ toggle functions.

The effect of each toggle can be overlapped with effects of any other toggles. For instance, neither double striking or boldfacing alone make a character sufficiently dark to remain obviously bold in a photocopy of the original printout.

But, overlapping the two functions achieves the desired degree of bolding. For example "⟨CTRL-B⟩ ⟨CTRL-D⟩ will print double bold and ⟨CTRL-B⟩ ⟨CTRL-D⟩" will print the phrase indicated in heavy boldface.

Wordstar also offers four user-definable print enhancement functions that can be specified as the program is being installed. These give the user easy access to the various type fonts available on a dot matrix printer like the Epson.

One important function Wordstar has that seems to be lacking in the other packages is the ability to halt a daisywheel printer in the middle of a text to

allow the type font to be changed. An annoying deficiency in the print enhancements, is that Wordstar provides only one mode of underlining. All printed characters and no spaces are underline.

But, if a continuous underlining is desired, XCTRL-PX XRETURNX will enter an overprinting line into the text and the continuous underling can then by typed in on the overprint line. This achieves the desired effect, with the caution that registration of the underlining with the text on the line being overprinted cannot be assured if the text is printed with justified right hand margins.

With printers capable of incremental spacing, Wordstar's justification is by inserting microspaces more or less uniformly along the line, with some preference being given in inserting them after punctuation marks, in the spaces between words.

Merge printing

Although merge printing is not a part of the basic Wordstar package, anyone using Wordstar should obtain the Mailmerge option.

(I have it for versions 2.10 and 3.00 only — I have not yet seen the option for version 3.30). Mailmerge has many useful functions beyond the obvious ones used in preparing customised form letters. Inserted information may be variables drawn from individual fields of the records comprising a data file or it may be the entire contents of a named disk file.

In either case, the inserted information will automatically be formatted according to the style parameters of the master document. Data files normally are structured using variable length fields and carriage return delimited records.

Field separators are normally commas, but other delimiters may be set using Wordstar's installation program.

If a delimiter is to be used within a field, it is only necessary to enclose it in quotes. Data files may be created directly with Wordstar, or with the Datastar package.

With Datastar an extra empty field must be created at the end of the form to place a comma after the last data field. Mailmerge requires this comma, and Datastar does not ordinarily create it.

If left out, Mailmerge will skip printing every other record in the data file.

Data files may also be created using Mailmerge.

The add variable option can send keyboard input directly to a disk file formatted according to the appropriate record structure rather than to the printer. Creation of the data file is facilitated by Mailmerge's screen formatting capabilities and its ability to limit input for given fields to a specified number of characters.

The maximum number of characters that can be input through the add variable option is determined by the line length remaining on the screen. Merge printed documents can use Wordstar's entire repertoire of formatting options.

In printing addresses or other similar blocks with varying numbers of lines, the printing of blank lines may be suppressed if the variable contains no information.

australian Micro computer magazine

Software Report Card

Wordstar

	Poor	Fair	Good	Excellent
Performance	☐	☐	☑	☐
Documentation	☐	☐	☑	☐
Ease of Use	☐	☐	☐	☑
Error Handling	☐	☑	☐	☐

System requirements:

■ CP/M-80 or CP/M-86

Price: $A666.00

Distributor:

Imagineering,
3/579 Harris Street,
Ultimo 2007.
Tel: (02) 212 1411.

I have found no upper limit to the number of different variables that may be formatted within a single form document — it is well over 100, each filled with 79 characters. Also, there is no limit to the number of times a given variable may be used.

Once variable names are defined by dot commands within the form document they may be used in any order or not used at all. Mailmerge also may be used to chain a series of files to the printer.

One disadvantage is that merge printing cannot be done in background, while normal printing can be.

Conclusion

To conclude the survey of Wordstar, I will summarise the major assets and deficiencies:

If one is a touch typist or intends to do enough word processing to become a touch typist, Wordstar's ergonomics is so much superior to the other four systems reviewed that I would recommend using Wordstar for ALL text entry.

There are many commands and most of them are on keys that have no nemonic relationship with the functions they generate. On the other hand, Wordstar's on-screen help is far superior to that offered by any of the other systems, and is organised in a way which readily helps the user towards a painless memorisation. If one needs output features of one of the other systems, type the text with Wordstar and then massage it as required, before printing with the other packages.

Wordstar also excels in its tabbing functions and its ability to handle complex tables. Through its dot commands, it provides the user with the most complete control over a printer's character and line spacing functions of any of the systems, and it offers the facility of sending halt codes to the printer to allow type fonts to be changed in the middle of a document.

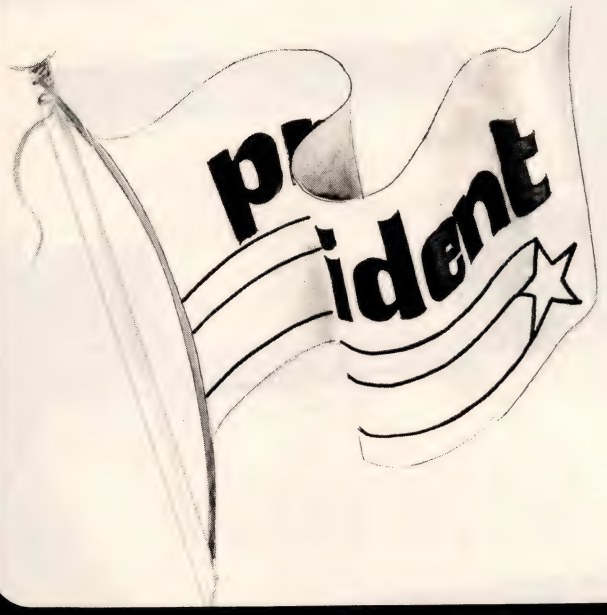
The one feature I miss most with Wordstar is its lack of support for true proportional printing through user modifiable correspondence and spacing tables. Correspondence tables are needed because many proportionally printing daisywheels have non-standard sequences of characters on the spokes. Spacing tables are needed to allow the user to print from any font in a proportional mode.

It is the only system I would recommend for technical typing on a daisywheel printer. Some users may prefer programs like Perfect Writer and The Final Word, which have many automatic formatting functions.

Wordstar has none. The typist must explicitly control essentially all formatting decisions.

For me this is an advantage — Wordstar formats the text the way I or my customers want it to — not the way some programmer anticipated I might like. For others not so concerned with stylistic details, the automatic formatting provided by some of the programs will produce far more professional looking documents than they would do themselves.

Part II next issue.



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  (with graphics) 10 (10 M/BYTE) $6215

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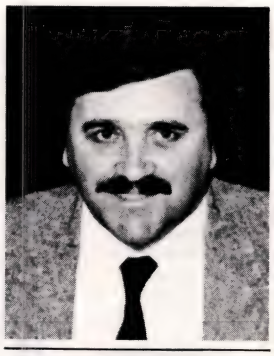

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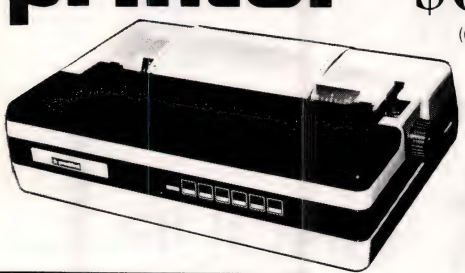

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SETTING THE STANDARD

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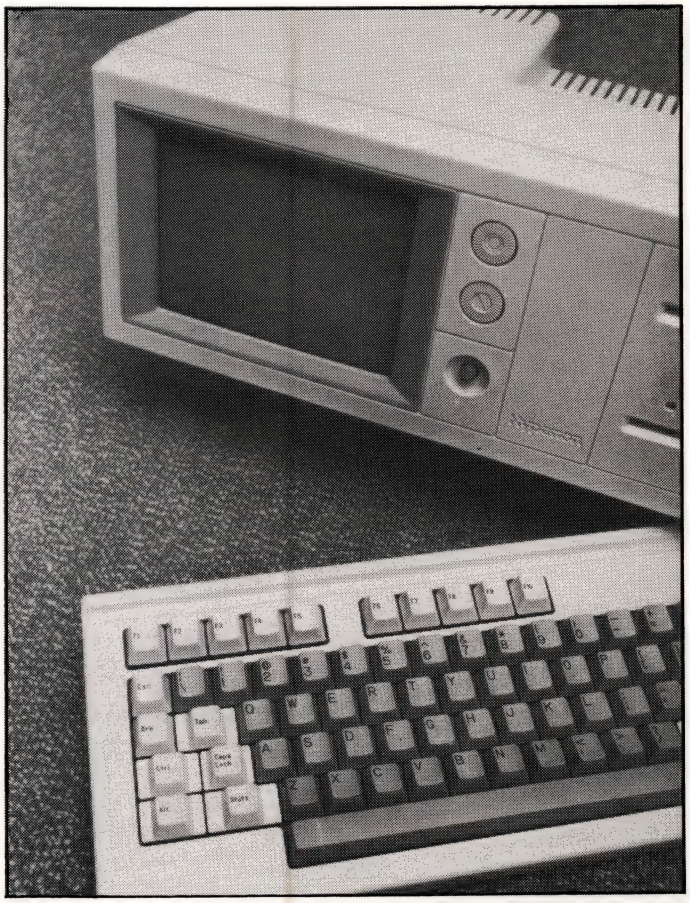
Canada's Hyperion reviewed

Ian Webster reviews an IBM compatible, transportable system designed as a professional personal computer.



THE Hyperion is a Canadian-designed and manufactured transportable micro computer system, intended for use as a professonal computer. It is one of the few computers designed specifically for managers' desktops, despite the consensus that this group is one of the target markets for microcomputers.

At first glance, Bytec appears to have succeeded in creating a professonal personal information environment by carefully considering the design issues. At second glance, their success is compromised by the inadequacy of available software and inappropriate documentation.

The Hyperion has merged an IBM-PC-compatible environment with the concerns of European design — typified by Victor's Sirius and ACT's Apricot, but, instead of appealing to programmers with technical excellence, Hyperion appeals to professional users with its elegance and integrated applications environment.

The processor is an Intel 8088 with a 4.77 Mhz clock, and a socket is provided for an 8087 floating point processor. User RAM is 256K-bytes with parity error detection and an extra 20K-bytes of static CMOS RAM dedicated to the display.

An 8K-byte ROM contains powerup diagnostics that take 30 seconds to execute, machine initialisation and I/O routines. Two 5¼ double-density, double-sided disk drives are provided with storage capacity of 320K-bytes each.

The drives can read, and read and write single and double-sided IBM-PC disks. A RAM disk can be configured as MS-DOS 'Drive C' with a capacity up to 160K-bytes.

The display uses a 7in amber flat-faced screen with brightness and contrast controls. The text display is 80 x 25, with the 25th line usually displaying softkey labels for 10 functions keys.

Five text display pages are available, and the character set comprises 256 characters defined as a 6 x 7 matrix in an 8 x 10 box with 2 dot descenders. Character attributes include underline, blink, intensify, reverse, double size, sub and superscript, all selectable on a character basis.

Graphics display formats include 640 x 250 and 320 x 250 with four-level grey scale. The IBM-PC graphic format of 640 x 200 is also supported.

The display turns itself off if the system is not used for a period of three minutes to prolong the life of the CRT.

The case was designed by the same team that styled Apple's Lisa, and features the same attention to elegance and ergonomics. The only bad design decisin was the location of the illuminated power switch next to the screen.

The switch is bright enough to be distracting. The low-profile keyboard, designed to European ergonomic standards, is slotted underneath the system unit when not in use and pulled out when needed.

The keyboard features 84 keys including 10 function keys and a numeric keypad with good feel and optional audio-key click. The back of the keyboard is raised into position on two extendable legs.

The serial port is programmable supporting asynchronous, synchronous, bisync and bit-orientated protocols. The parallel port is compatible with centronics printers. A sophisticated modem is included, but canot be used in Australia.

Other features include a battery-backed time and date clock, primitive sound capability, composite video output and an expansion connector intended to connect to an expansion box with slots for IBM-PC-compatible expansion boards. The Hyperion is supplied with an enhanced MS-DOS

1.1, GW-Basic and a Macro-Assembler with extensive disk-based documentation for all system commands.

The MODE utility is used to reconfigure the RAM disk, screen, printer and serial ports. The screen can be configured as an Hyperion, Ascii or IBM screen.

The KEYEDIT utility is used to configure the function keys. This configuration is saved to disk, then reloaded when the system is booted. Hierarchies of function-key definitions can be programmed.

The applications software bundled with system includes the spreadsheet Multiplan and a word processing program In:Scribe.

InScribe: is a useful *what you see is what you get* word processor that includes the ability to display bold, underlined and sub-superscripted characters on the screen.

The program does not include a print function, and files are printed from MS-DOS using a filter utility if character formatting is supported by the printer being used. A filter for the Epson printer is supplied.

The system, which weighs 8.2Kg and measures 46.4cm x 28.8cm x 22.3cm is transportable and a vinyl carry case is provided.

IBM-PC compatibility is claimed without labouring the point. The disk drives can read and write IBM-PC format disks, and of several programs tried on the system, those that were 'well behaved' worked and those, such as word processors, that tend to directly address the machine's hardware would not always work.

Bytec's efforts with the implementation of popular IBM-PC packages shows they are interested in ensuring these packages are available.

The popular spreadsheet, Lotus 1-2-3 is available for the Hyperion from Bytec.

Setup

SETUP is as easy as unpacking the machine, pulling the keyboard out from under the machine, inserting a disk and turning on the power. The carry bag provided makes the Hyperion the easiest of the transportables to carry over long distances, and the handle in the top of the case makes it very easy to shift it over short distances.

The mode command enables the RAM disk, printer and serial interfaces to be configured easily.

Ease of use

The Hyperion is easy to use. The system is function key driven with the system software and the supplied applications software configured for the softkey line. Other applications software can be integrated using the KEYEDIT program.

The capability to configure a RAM disk from 0-160K-bytes makes a significant contribution to the quality of the environment.

The HELP and EXPLAIN commands are supported with extensive files that explain system commands softkey and auxiliary programs. A user with previous experience on microcomputers could learn to operate the system by using these facilities.

The screen is readable and adequate, although the detail possible, particularly the display of bold and sub-superscripted characters is not really appreciated on the 7in screen. The position of the illuminated power switch, right next to the screen is a distraction.

The keyboard is very light and when balanced on its two extendable legs has a tendency to rock and bounce when used. The keyboard cable is short, to encourage users to sit close to the screen but tends to coerce the user into an uncomfortable position right on top of the machine.

Apart from these considerations, this is one of the most convivial desktop systems I have used.

Performance

The machine performs well. All the system's features are integrated, rather than added on to a basic configuration.

The Hyperion is an implementation of the IBM-PC environment, offering compatibility with significant enhancements in memory size, graphics and useability. Applications execute at a speed comparable with the IBM-PC, with the RAM disk and the extensive use of function keys making the power of the system available to the user.

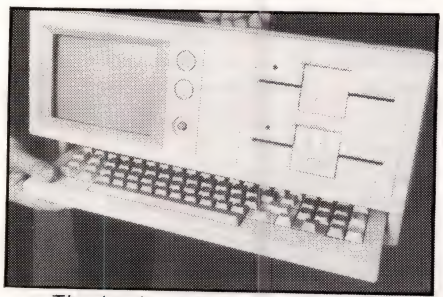
Documentation

THE documentation provided is as a 40-page setup guide and five boxed, ring binders with users and programmers guides as well as manuals for Multiplan, Lotus 1-2-3 and In:Scribe, a word processing package. All manuals have been written for the Hyperion, and are well presented.

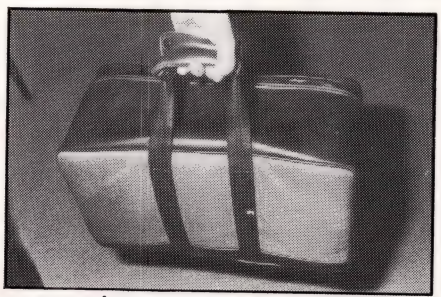
The setup guide describes how to unpack the system and prepare it for use. Unlike many setup guides, this one is packed outside the packaging material surrounding the system, so it is possible to read it before unpacking the machine.

The guide explains the systems components and provides a list of 20 steps, with illustrations, from unpacking the system to powerup. The user guide introduces the Hyperion by explaining the use of the softkeys, followed by brief introductions to the line editor, Edlin, and DOS using the function keys.

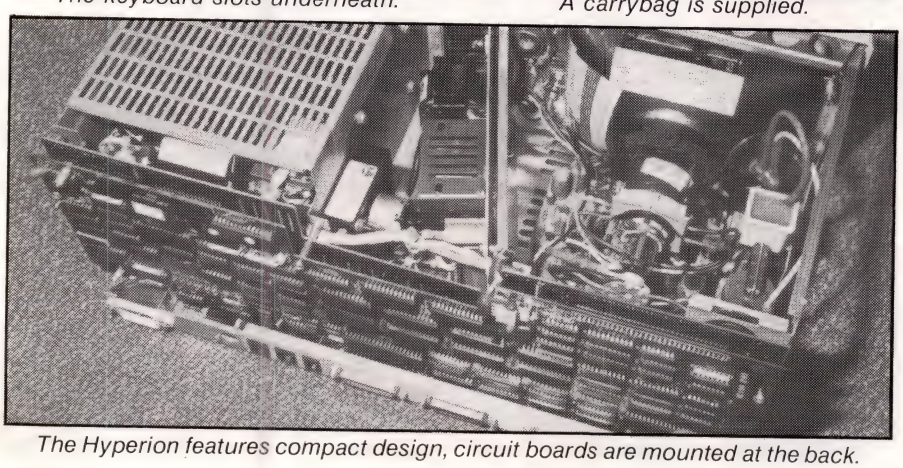
The main section of the manual provides a brief overview of the system, then documents all MS-DOS com-



The keyboard slots underneath.



A carrybag is supplied.



The Hyperion features compact design, circuit boards are mounted at the back.

mands and the operation of Edlin. An advanced procedures section explains the use of batch files for DOS commands.

The manual is unusual in that it consistently refers to MS-DOS as DOS.

The programmer's guide introduces GW-Basic, followed by details on each command, statement and function. The Macro-Assembler documentation is substantial with sections on the associated linker, debugger and cross-reference utilities.

Both manuals are too big for the ring binders, are awkward to use and will deteriorate with use.

There is no documentation of the Hyperion's systems environment.

The softkey configuration program KEYEDIT is not mentioned in the documentation, and is only discussed in the Explain file on the master disk.

The MODE command is not explained is sufficient detail for programmers to be able to understand the particulars of different system configurations. It feels as if the Hyperion technical manual that would explain the detailed operation of the system is missing.

This information is essential for any computer claiming compatibility with another system, and is an inexcusable omission. The lack of technical documentation makes the Hyperion a very difficult machine for programmers and system implementers to come to terms with.

The Multiplan and Lotus 1-2-3 documentation is the standard documentation rewritten to the Hyperion implementation. The In:Scribe manual provides an adequate tutorial introduction to its features, but there is no documentation for the creation of the printer drivers needed to support the charac0 ter formatting features of the word processor.

australian Micro computer magazine

Hardware Report Card

Hyperion

	Poor	Fair	Good	Excellent
Setup	☐	☐	☐	☑
Ease of Use	☐	☐	☐	☑
Performance	☐	☐	☑	☐
Documentation	☐	☑	☐	☐
Serviceability	☐	☐	☑	☐

Features of Unit Reviewed:

- 8088 procesor
- 256K RAM
- Dual 320K disk drives
- Centronics and serial interface
- 7in amber screen
- 640 x 200 dot graphics
- MS-DOS and GW-BASIC
- Multiplan, In-Scribe

Price: $A5500

Distributor:

Zabron Pty Ltd
8/275 Alfred Street
North Sydney 2060.
Tel: (02) 92 0729.

Serviceability

THE case of the Hyperion is secured by six screws. When removed, the compact design of the system is revealed, with all digital components on two circuit boards placed vertically at the back of the case.

Both boards have to be removed before any service work can be performed, and while this isn't as easy as unplugging a board it shouldn't take a technician very long, The monitor and drives occupy the rest of the chassis, with the power supply board installed vertically to help shield the drives from the monitor.

A small fan is attached to the disk drives to keep them cool. Removal of the disk drives for service looks like a complex exercise. At present, service for the Hyperion is supplied by the Computerland stores which support the system.

The distributor doesn't have extensive service facilities and is providing sub-assembly swap to dealers. All machines are subject to a 24-hour operations test in Australia before being sent to dealers.

The machine is well designed and has a reputation in Canada as a system with few service problems.

Conclusion

The Hyperion is a sophisticated desktop microcomputer, designed as a transportable. The IBM-PC compatible environment has been enhanced to provide a package meeting present expectations of a professional personal computer system.

The attention paid to integrating the hardware and software environments has produced a particularly useful applications-oriented system that is as good as any in its price-performance range. The documentation and the lack of communications capabilities that can be used in Australia are it's weak points.

If these weak points can be rectified, the completeness of the package makes the Hyperion an excellent example of system design, and good value as a professional personal computer.

Hyperion in Australia

THE Hyperion is manufactured by the Canadian Bytec Management Corp at plants in Ottawa, the US and soon in Hong Kong. It was first shown in Australia at the APC Show in March, 1983.

Since then, Peter Ackerman, of Sydney company Zabron, has established a small organisation to distribute the transportable in Australia. The system will be launched officially at the Canadian Consulate in January.

Computerland Canada and Computerland US are important retail outlets for the system, and all Australian Computerland stores will be selling the Hyperion. Zabron also is looking for other dealers and OEM's interested in marketing the machine.

A technical reference manual does exist, and will be released next year with a maintenance and diagnostic manual. The Aladin relational database bundled with the system in Canada will be available in January.

A seven-slot expansion chassis that will support IBM-PC compatible expansion cards is now in Beta test and expected to be released early next year. Zabron has also received a prototype communications device suitable for use in Australia that will support the communications features available in Canada.

The device supports telecommunications with sophisticated voice and data features under computer control.

Teaching, learning and computers

The National Advisory Committee on Computers in Schools has drafted a report on computers in education. Ian Webster comments on its inadequacy . . .

THE National Advisory Committee on Computers in Schools was established by the Commonwealth Schools Commission in March to provide advice to the commission on a broad range of matters relating to schools computing. Using this advice, the commission would provide policy advice to the government on a schools computer education program.

The committee was prompted by the announcement of the governments 1984 guidelines to the Schools Commission that indicated $A18 million would be provided for a three-year program relating to a particular set of objectives, concentrating on secondary schools.

The commission in mid-November, released the committee's report *Teaching, Learning and Computers* to select organisations that might be interested, and asked for comment.

Unfortunately, the government's guidelines appear to have exerted considerable influence on the committe, which has failed to address the terms of reference provided by the Schools Commission and instead has written the report to the objectives of the governments guidelines.

Teaching, Learning and Computers consists of seven chapters, eight appendices and two statements of dissent. The first chapter details the immediate background to the formation of the national committee, and lists various objectives and terms of reference of the commission and government.

The second chapter provides a rundown on the systemic perspective of current activities in each State and brief overviews of national programs in the UK and France. The third chapter presenting the rationale, objectives and principles of the national program, is the worst chapter of the report.

There is no attempt to develop a rationale for supporting computing in schools. The justification for a national program, given that the need for a program is understood, is a curious amalgam of equal outcomes, co-ordinated development, suggestions that Australia will fall behind other countries if we don't, and that schools should be doing their bit to help develop Australia's high-technology export trade.

The aims and objectives of the program completely ignore the wider implications of the impact of information technology on the education system and process, instead presenting an ad hoc collection of desirable outcomes. The operational principles of the program give control of the Commonwealth's program to the various State education bureaucracies.

The fourth chapter presents the findings of the working parties on curriculum and professional development and support services. The working parties had enough practical expertise amongst their members to present appropriate recommendations, even though they felt compelled to explain these recommendations in terms of agreement or disagreement with current practices.

The fifth chapter, covering the software and hardware working parties' recommendations is interesting reading as the recommendations represent the interface with the commercial industry that is driving this technology into schools. Both working parties use the word 'urgency' in their recommendations, but the software committee avoids taking any definite stands, which is understandable — but unfortunate, as it is this area more than any other where the collective experience and judgement of computer educators must be forged into strong policy positions.

The hardware working party jumps right in. Driven hard by the Department of Science and Technology (whose contribution to the whole report is outrageously self-serving), this working party maps out a program for the future.

The selection of the BBC microcomputer, Microbee 64 and Apple II as the supported systems for schools was to be expected, and is of little real importance. Hardware standardisation is a naive solution to problems the report addresses, and the recommendation that Commonwealth money for all education programs can only be used to buy these machines is evidence that the working party did not think through the implications of their strong stand.

The two closing chapters propose an organisational structure and summarise all the recommendations. The hardware acquisition process, documented in Appendix E can only be described as bizarre in the context of this report. It should be the subject of protracted arguement within the computer education community.

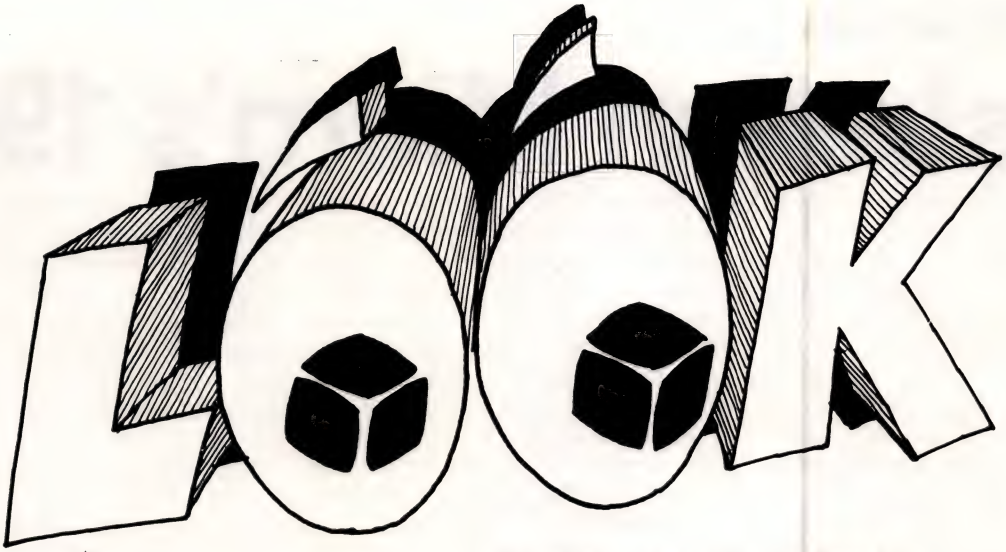
Both of the dissenting reports come from NSW. Dr Fenton Sharpe, director of studies with the NSW Department of Education makes the case for the NSW department's states rights in the matter of hardware selection. Some of his statements are interesting, given that departmental spokesmen recently have refused to give any advice or direction to teachers on the appropriate use range of eight models now on contract in NSW.

Paul Jeremy probably has more experience with computers than anyone else on the committee, and his dissenting report on the hardware recommendations is an expression of the disquiet anyone with real-world computing experience will feel about this report.

The Schools Commission has few options with this report. A rewrite is necessary, and it's more a case of whether it is rewritten before policy advice is given or after.

Like most other reports on technology matters in Australia, this one avoids its reponsibilities, sheltering behind a consensus that current attitudes are adequate, and all that is required is the funding to do more. Optimistically, this report may be remembered as marking the point at which many computer educators realised they didn't really know what they were trying to achieve and decided to develop more relevant attitudes than the narrow concerns of classroom computing.

Copies of the report are available from the Schools Commission in Canberra and the commission has advertised positions to administer the program.



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Ian Webster outlines . . .

Australian Micro's 1983

THE Australian microcomputer community underwent a transition in 1983. The long dominance of 8-bit microcomputing, the attitudes and approaches it encouraged in suppliers and dealers was replaced by 16-bit microcomputing.

This transition was gradual, and despite substantial growth, the industry has struggled through the year with most leading suppliers and distributors unconvincing in their marketing approach. This uncertainty in creating the market for microcomputers has been offset only by the activities of top-level dealers and the interest shown by many companies previously involved in the minicomputer industry.

Commodore successfully folded its Vic-20 success into the Commodore 64, establishing the largest installed base of any machine in Australia. More than 100,000 Commodore 64s should be sold before the year ends.

While several suppliers tried to enter the home-computer market towards the end of the year, most efforts lacked commitment.

This is the year in brief from Micro's news pages:

March:

Apple's Lisa stole the first APC Show supported by the release of Apple IIe. The IBM-PC, Dec Rainbow, Olivetti M20, Cromemco C10, Canon AS-100, Toshiba 100, Seiko 8600, Epson HX20 and the Commodore 64 were some of the machines shown for the first time.

Additional releases in the month included the Wang Professional microcomputer, Morrow Micro Decision and the Zorba portable. Apple announced it would be taking over as Australian distributor from Electronic Concepts.

The re-organisation of microcomputer retailing began with the opening of the first Myer Computer Centre and the establishment of companies such as ACI and Parity as IBM-PC dealers.

April:

IBM released the IBM-PC XT with 10M-byte hard disk despite Phil Estridge, who was in charge of the IBM-PC project, admitting he didn't know why anyone would want one. Digital Research released their programming languages for CP/M-86 and announced the GSX graphics interface and Dr Logo.

Channel 9's computers failed to handle the pressure of performing live during election night, and mice became fashionable. The second-generation spreadsheets MBA and Lotus 1-2-3 began appearing in Australia.

May/June:

Necisa started to show it would make a success of the APC. Brisbane company Archives became Australian distributor for Digital Research. Apple Inc took over its operation in Australia and former Pepsi Cola executive John Scully became president of Apple. The Labor government announced that the Schools Commission would establish a committee to prepare a schools computing policy, the NSW Education Department established its long-overdue computing unit, and the first national computer education conference was held in Melbourne.

Overseas, the S-100 bus became the IEEE-696 standard and Tandy surprised everybody with the first briefcase computer, the Model 100.

July:

Micro mainframe links and integrated software environments became the fashion and Apple continued trying to litigate the local distributors of Apple look-alikes out of business.

Radaro released the Dot portable. Xerox released Smalltalk for commercial licensing and Microsoft started shipping MS-DOS 2.0. Data 83 provided evidence that there were nearly as many multi-user systems as desktop microcomputers on the Australian market.

August:

The slow sales of the IBM-PC began to worry dealers as Australian corporations took their time evaluating their options. The CETIA show was another poorly attended Melbourne computer show. Local computer releases included the Plexus Unix supermicro and the Medfly and Franklin Apple look-alikes.

September:

Nissei Sangyo took over distribution of the Hitachi. Gary Alpert's Computer Country operation went out of business. Local releases included the Gavilan luxury briefcase computer, the Quasar and Tandy's Model 12, 16 and 100 systems.

MSA released the Peachpak micro-mainframe software package. Microsoft's programming languages became available under MS-DOS and Microsoft announced the MSX standard for home computers.

IDC estimated the local desktop market would rise from 25,000 to 55,000 units, and the home market would rise from 51,000 to 170,000 units in 1983.

October:

Australian Micro's Australian manufacturing supplement showed there was considerably more happening in Australia than most people realised. Amust released the 816 Executive portable, and production of the Dulmont Magnum and Unison supermicro began.

Microsoft took over its local distributor and Video Classics moved into consumer electronics, with the establishment of Computer Classics. Overseas, Atari released a new range of machines, and Osborne released the Executive I.

November:

The 10th Australian Computer Conference saw the release of Fortune, Sage, Stearns, Sharp PC-5000 and Corana microcomputers. Apple cut the price of Lisa in an attempt to stimulate sales, and Vision had its first showing in Australia.

Osborne filed for bankruptcy.

December:

IBM announced it would make the IBM-PC in Australia. Apple fired all its dealers then reappointed most of them.

The Schools Commission "Computers in Schools" committee released a very disappointing report.

Attache software moved to the US in an attempt to organise a public offering.

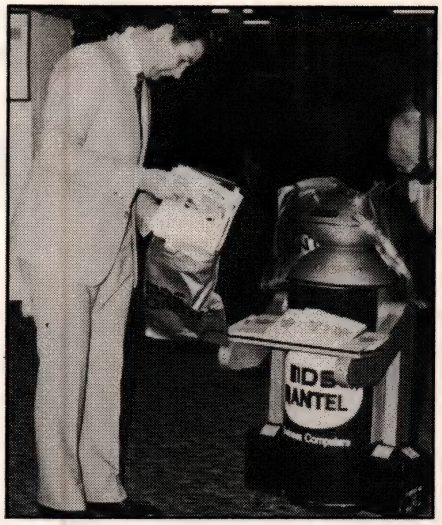
Texas Instruments pulled out of the home-computer market and English supplier Grundy collapsed. Telecom Australia finally won approval to establish a national Videotex service in 1984.

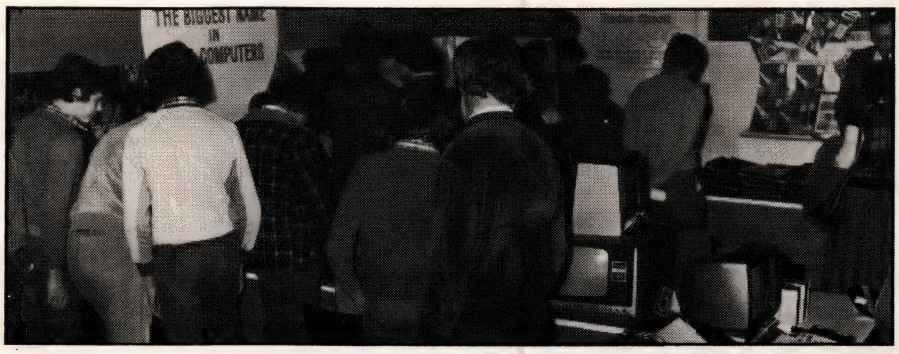
If the slow development of the corporate market in 1983 was a source of frustration for many companies, 1984 will be crucial for all of IBM's competitors in this market.

The biggest event of 1983 promises to Apple's launch of Macintosh early in the year.

The launch is crucial for Apple, and should see the re-emergence of personal computing as a concern in a market increasingly dominated by corporate microcomputing.

■ *Just as 1983 started with an avalanche of releases at the March Personal Computer Show, 1984 will start the same way, with a flood of new hardware and software products to be shown at PC 84 in Sydney, next March.*





Will Australia's micro mouse roar this year?
Tony Smith thinks it may as . . .

Locals climb onboard

SHOULD Australia successfully establish its own computer manufacturing industry, 1983 will undoubtably be remembered as the first year in which the prospects for such an industry received any real attention.

CMAD, Digital Electronics, Hartley, Time, D.D. Webster and several others have been making real sales into specialised markets for some years, but 1982 was the year in which quite a number of other companies became visible contenders for the first time as a prelude to the rush of '83. At the close of 1983, it would be fair to say that only Applied Technology's Microbee had made it into the big time as the only Australian-designed and manufactured computer to be listed individually on IDC's market estimates with more than 10 per cent of the home computer market for two consecutive years.

Microbee had two main advantages in getting out of the pack: it is the only Australian unit in its market segment, and its manufacturer backed its judgement time after time after time when the cautious would have held back at some crucial point.

To put one argument to rest permanently, it must be said that Applied Technology openly admits procuring its components in Hong Kong and shipping those components in knocked down sets to its Gosford factory. Having seen all the soldering, much of it by hand, of more than 1000 units a month at Gosford, there is no doubt as to where the Microbee is manufactured.

The October 1983 issue of Australian Micro identified more than 30 companies with legitimate claims to manufacturing general-purpose computer systems in Australia, and that number has subsequently risen to more than 40 on the Department of Science and Technology's files.

Beyond those companies are others specialising in niche markets, components, manufacturing services, peripherals and especially communications equipment. Just a few outstanding examples of such companies' products are:

■ Fairlight Instruments' CMI, the dominant top of the range computerised music synthesiser on the world market.

■ Circuit Technologies, of Perth, whose multi-wire comuter-aided circuitboard manufacturing facility is providing many companies with economical facilities for fast turnaround prototyping and low-volume manufacture so necessary in Australia.

■ Pulsar Electronics, whose Little Big Board single board computer is at the heart of systems built by several Australian manufacturers.

■ The Netcom and Applecom communications cards for the Apple II computer whose development was supported by Electronic Concepts when it was the Australian Apple distributor, and which have been picked up by Apple itself to sell to its world market.

In real dollar terms, the local micro software industry is likely to remain considerably more important than the more glamorous hardware manufacture for some time come. The vast number of small and some quite large software companies which provide packages and contract systems development on mainframes and minis are increasingly moving some or all of their activities across to micros.

Those companies, many of which like to go under the somewhat pretentious title of "Original Equipment Manufacturers" (OEMs) to qualify for special hardware discounts, have had a heavy bias towards accounting systems which cannot sensibly be imported because of international difference in corporate law land accounting practice. Their migration to micros has been because the growing power of micros enabled software from larger systems to be readily ported across.

The potential of micros to act as truly personal computers generally runs a poor second with such OEMs. With several exceptions, micro-based software development for its own sake only really began last year in Australia.

The most notable exception was Zardax, one of the most successful word processors for the Apple II in the world market. Another widely proclaimed driving force for Australian micro software has been the concept of Australia being a prototype shop for Japanese computers wanting software for English-speaking markets.

Hitachi started that trend with its Peach, followed by the even more disappointing National Panasonic JB-3000, although more recently the launch of Amust's Executive 816 revives long-term hope for the success of such joint Japanese-Australian projects by involving both sides from the start of the design process.

Last year saw a rapid rise in the number of notable Australian software products outside the traditional accounting area, including:

■ AED Computers' Multiple Program Selection, an ambitious preview of some main concepts of Concurrent CP/M (Micro, March, page 17).

■ Academy Software, of Brisbane's VACS database management system running under Unix (Micro, May/June, page 59).

■ 6S Computer Advisory Service's ASK! auto-tutorial-based business information service (Micro, November, page 20).

Hints of support

The 10th Australian Computer Conference (10ACC) was not only seen as an event that would be dominated by microcomputers, but also where the Australian hardware industry would become visible for the first time. The often conservative Australian Computer Society went as far as to devote the "number one" stream of the conference to "The Trials and Tribulations of Manufacturing Computer Hardware and Software in Australia".

Unfortunately, the choice of a remote venue for the stream, combined with the lack of interest of 10ACC delegates in such matters, helped minimise attendance at some very well prepared papers.

The election of a federal Labor government brought with it the elevation of federal parliament's self-proclaimed expert on high technology, Barry Jones, to the even more visible position of Minister for Science and Technology. Jones earlier had alienated many supportors of a native computer manufacturing industry by claiming in his book *Sleepers Wake* that Australia had missed the computer industry boat.

He subsequently has modified his position to the degree of including it in government policy, direct support for personal computer manufacture (which he now interprets very broadly, along side the proven Australian strengths of communications and software) and, more interestingly, integrated circuits. CSIRO's VLSI design program has put Australian second in the world in custom-integrated circuit design in little over a year and may prove the most important initiative taken by government in this country.

The two other major initiatives of the federal government in 1983 were its endorsement of the Espie committee recommendations for funding high technology ventures and the budget commitment to a computers-in-schools program which is likely to give Australian manufacturers preference. State governments are more directly involved in the day-to-day provision of practical help to Australian manufacturers, this being increasingly seen as an area where governments should be visibly involved.

Even the usually conservative Melbourne Herald gave extensive news and features coverage, as well as several editorials, to the need for Australia to become a high technology supplier if it was to retain economic prosperity.

But the best efforts of many companies and some institutions notwithstanding, Australia still stands a long way from balance in the supply of the full spectrum of computing resources. We have no capacity for printer, video screen and magnetic disk drive production with are essential components of computer systems.

Maintaining momentum

There was a great deal of noise in the Australian industry last year. Many Australian hardware suppliers made real progress, but no new product really made the big time. (Microbee was well established in 1982).

If all that noise is to be justified, 1984 has to be the year when some more products really make it. Dulmont's Magnum is the lead runner.

Now coming off the production line, it is one of only three real contenders in the world for what is certain to be a major market segment — truly powerful hand held computers. Its pricing structure gives it a real chance of being the outright winner, particularly outside the US and Japan.

In dollar terms, the Unison of Bill Hollier, L&L and Email is in the right place at the right time to do a huge job of import replacement. Economical multi-user Unix machines will be one of the big micro growth areas this year.

Unison has a lot going for it, but a number of more recent offerings from other local manufacturers could step in and fill the beach if it is delayed much longer.

The other big opportunity this year will be for the established Australian manufacturers to launch major new products. This year, more than possibly any other, promises particularly rapid change in the state of the art and is likely to see the start of real pressure on traditional computer architectures, not just to grow but to hold their established markets.

It will be the year in which the mouse has a bit of a ball with Unix System 5 on 32-bit processor chips. It could also be the year the Australian mouse roars, given the courage. □

Pollak on spreadsheeting

IN A recent survey conducted by The Yankee Group and published in Computerworld, 100 companies were surveyed to ascertain the major use of personal computers in organisations today. The winner by far was "spreadsheets" closely followed by "financial modelling".

I find this amazing, not because spreadsheets are so prevalent in organisations, but rather because "spreadsheets" are not a *use* of personal computers; they are simply a tool, as is the hardware. The "use" of spreadsheets, is the many things spreadsheets can be used for.

One use is financial modelling; others are ad hoc decision support and report preparation. Apparently, spreadsheets have become an integral part of business, so much so that the term "spreadsheets" has become part of business jargon. Perhaps in future a manager will instruct a subordinate: "Here, Ron, go and spreadsheet this for me."

The past

Visicalc

Although spreadsheets were around before Visicalc, they were not really an event.

Many people are attributing the success of Apple computers in the business environment because they ran Visicalc.

When I first came across Visicalc, I was using a Commodore; it was reasonably slow and did not have all the features of other implementations of Visicalc. Never the less, I thought it was the greatest thing since sliced bread. Still, there are many people using Visicalc who are perfectly happy with its power, easy of use and "user friendliness".

Multiplan

Visicalc was good, but Multiplan had me so convinced that I established my management consulting business on its back. Multiplan is powerful enough to satisfy most people, but its main strengths are ease of use and the high degree of comfort it provides the user.

The element of "comfort" provides a measure of quality assurance so hard to find in spreadsheets. The easier it is to use a computer program, the easier it is to make a mistake.

If an error has been made and the developer has no real feel for the expected result, or if the error is small, (but, perhaps, not immaterial) it may go undetected. It is also not always easy to verify spreadsheet models. It probably would take as much time to verify a model as it would to recreate it.

What headaches this must be causing my old confederates in EDP audit! Multiplan is an example where "big is not always beautiful".

Because, in today's market, 256 rows by 63 columns is considered the economy-pack size rather than large, it often is necessary to break down an exercise into logical units before combining results into a summary sheet. Multiplan ideally is suited to this sort of modular thinking, and I believe model creation in this style reduces possible errors.

Supercalc

Supercalc is a difficult product to place. It was the first important Visiclone — undoubtedly built to surpass Visicalc. When I reviewed it for the portion of the Deloittes book I wrote, I totally underestimated the stored keystrokes feature.

This is a powerful feature not available with Multiplan, even though Multiplan was released later. The major implementation of Supercalc is, as far as I am aware, on the Osborne (may it Rest in Peace).

Lotus 1-2-3

Of all spreadsheets available today, Lotus has captured most attention. It is an integrated package covering spreadsheet functions, information management (database) and graphics.

Even though 1-2-3 has had to enter Australia via the back door at the time of writing this article no authorised distributor existed, it is still selling in large numbers. If one had to identify the major factor for Lotus 1-2-3's success, one could call on several features.

These include its range of functions, integrated nature, computerised tutorial, ease of use, size (2048 rows by 256 columns), speed . . . one could go on for some time without coming to the one tangible or intangible feature that has made Lotus 1-2-3 the outstanding success that it is.

Lotus Development Corp's marketing skill must be acknowledged. The release of 1-2-3 in the North American market came with unprecedented fanfare for a software product.

Once Lotus has established distributors in Australia, we might be privileged to see a Lotus roadshow.

Stretchcalc

In the last quarter of this year, Stretchcalc arrived in Australia. No, it is not the latest and greatest spreadsheet-graphics-database package.

It is a home renovator's kit for Visicalc, taking Visicalc into the world of graphics and sorted columns of data. Stretchcalc is a product I would rush out and buy if I was a Visicalc user not wanting to incur the expense of a new package.

Crystal ball gazing

Few would argue that Lotus 1-2-3 and Multiplan will succeed next year — Lotus 1-2-3 because of its power and Multiplan because it fulfills an organisational need in a small, easy-to-use package. Both packages are supported by companies with well-oiled marketing teams.

It is no good having a good product if you cannot effectively tell buyers about it. No. We have not reached the end when it comes to spreadsheets.

An enhanced 1-2-3 is around the corner (1-2-3-4?). Microsoft recently released an upgrade for Multiplan (send them $A25, or $A30 if you have the IBM version, and I understand you can get the latest version which allows you to have bigger models within the same-sized matrix of cells).

Hopefully, later spreadsheets will allow you to:

- Have different spreadsheets in different windows on the screen.
- Have better wordprocessing features integrated with a spreadsheet.
- Have better systems development features. Most organisations have a need for small ad hoc systems.
- Automatically store your present worksheet when you load in another.
- Display graphs on a mono screen.
- Use all cells on the spreadsheet.
- Easily extract from other systems.

The point is not to denegrate any spreadsheet by identifying these needs, but simply to indicate there is still scope for new entrants if the present product range is not enhanced.

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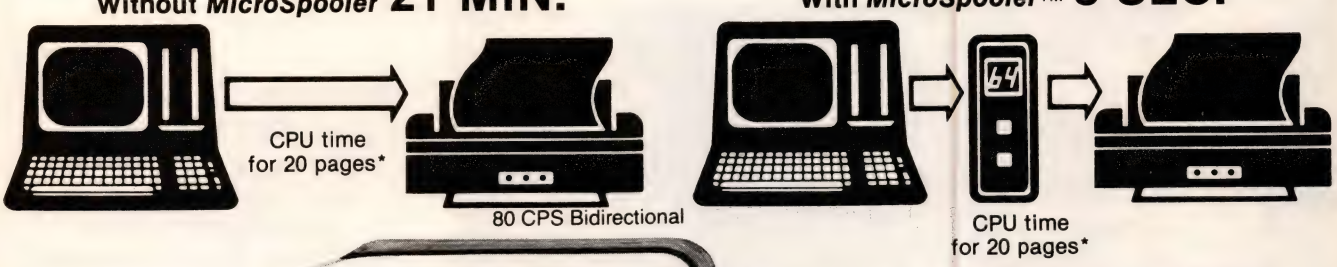

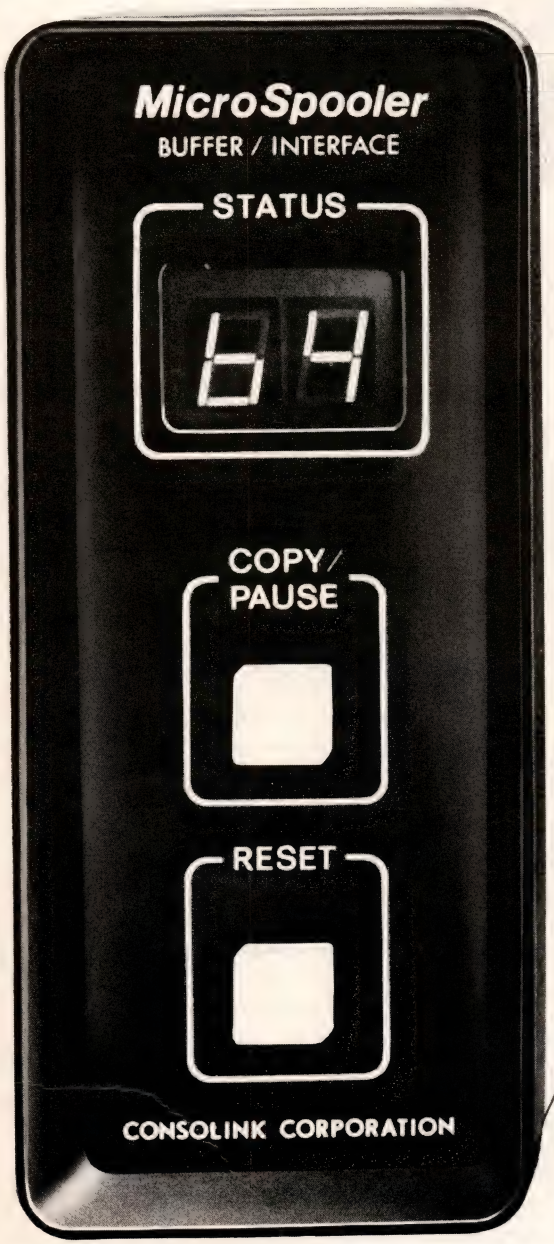

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IBM ushered in era

Norman Kemp casts an eye over 1983, which began explosively with releases and enthusiasm. After several spectacular collapses, the year settled down to an increased sense of organisation.

IBM PC was passed off as "The Event".

AUSTRALIA'S computer industry had to wait until February 9 before celebrating its New Year's Day in 1983. Long, anxiety-ridden calendar months had passed before the Great Event, which it was said would legitimise the radical microprocessor, soon to be better known as the personal computer, and elevate to professional respectability the beast beloved only by hobbyists and arcane enthusiasts who spoke its peculiar idiosyncratic languages.

At last, and following a spate of rumors, IBM Australia did the honors in style at Sydney's Sebel Town House. There were a few speeches, none too short, a curtain was drawn from an IBM PC on a stand in front of a hushed gathering, and the presentable face of desktop computing was ushered in for public judgement.

It was said — no one later could remember by whom over the champagne toasts — that IBM had done it again, and there soon would be competitive vendors swooning at the shopfronts, or measuring their rate of fall from high buildings. An industry shakeup, or shakedown depending on taste, was inevitable.

Some seasoned visitors to the preview, who had been to a raft of micro releases the previous year, cautioned that there could be some problems over deliveries and software, but these matters did not seem significant in the rising dawn of Australia's desktop computing era on February 9, 1983.

In the event, the impact of the IBM PC on local marketing was long delayed, and even the mid-year launch of the hard disc XT model did little to ruffle marketeer's feathers. As predicted, IBM had hardware and software delivery problems, and if many other companies could do little better, most managed to hold their ground in the market to the end of the year.

The future for some, propelled by the latest announcement of the IBM PC jr, may be less secure. The buying public got a good look at microprocessors through the Personal Computer Show in March, and Data '83 in May, both in Sydney, and later at the 10th Australian Computer Society Conference in September.

A number of smaller business equipment shows also had featured spots for micros, but a new development was the growing interest shown by parents and teachers associations in a number of schools who organised demonstrations of classroom equipment. Although the big shows designed to attract large crowds undoubtedly will continue to receive lucrative patronage from computer suppliers, moves to bring in specialised and specifically interested audiences, and which do not involve high display stand costs could become more numerous this year.

While IBM Australia for the first time established its own dealer and retail outlet network, two large US groups which had shared a common distributor came in as independent operators within a few months of each other. The former official Australian distributor for the widely acclaimed Apple computer products Electronic Concepts, founded by Rudi Hoess, had to renegotiate when both Apple Inc, as a manufacturer, and Computerland, a distributor and supplier, established separate organisations complete with their own managing directors and new warehouses to supply Australian customers.

Tandy Electronics, a conglomerate in which personal computers were only part of a widespread range of consumer products, shifted to an expanded location just outside Sydney where the company also installed some assembly facilities. All US-owned and driven, the Three Marketeers were lined up for big computer business to the small buyer.

Ringing them is a growing number of dealer outlets, among the largest being the business centres established by The Myer Emporium in Melbourne and interstate, and Grace Bros department stores in Sydney and at suburban Parramatta. Computerland has a chain of 17 outlets, and Tandy is selling through more than 130 outlets which include 13 computer centres. Specialist shops have abounded both in cities and small rural towns, and several enterprising Australians have started domestic software distribution and manufacturing operations, of which Imagineering, run by 24-year-old Jodie Rich, is representative of a new and ambitious generation.

Increasingly, optimistic manufacturers from the US, Japan, the UK and Europe shipped micros into a country where the choice already was vast. The buyer had a choice of a computer for home use from several hundred dollars — the brands of Commodore, Atari and Texas Instruments, particularly, became almost household names, bringing arcade games into the

family living room — with Apple and Tandy trying to boost their image by promoting themselves through more standardised operating systems and software in the business ranks.

Apple produced one of the few genuine surprises of the year with its Lisa, bringing in a fresh idea into window screen display for office executives.

Industry technology, by keeping just ahead of demand, managed to continue to add some confusion for the novice by introducing such variations as eight-bit and 16-bit machines into the arena, and multiuser and multitasking as ultimate essential functions.

Prices of hardware, vendors were quick to point out, fell considerably in the year in relation to higher performance, but appear to stabilise around $A1500 or less for home computers, and from $A3500 and up for the typical conventional commercial box.

Disc drives, printers and software are all additional to the initial outlay, and an item which counts heavily and is often forgotten — because it is not pushed by vendors — is sales tax. As a rule of thumb, a full range of accessories and software for a computer can cost up to three times the amount of the actual processor box.

Towards the end of the second half of last year, two trends had emerged. The first, following some spectacular collapses in the US, has involved doubts about the future viability of the mass market for home computers.

The second was a better appreciation by the business sector of what computers were seeming to be about, aided by the appearance of some primordial software which appears capable of development for effective micro-mainframe links.

In the business area, the prospect of connecting a series of microcomputers to a mainframe database, or for updating and retrieving data over long distances — among which data transmissions by satellite are looming — promises rapid growth for the computer industry. Although the idea of taking a floppy disc home and continuing to work on it with, say, the PC jr has been expressed hopefully by the industry, it is likely most people will keep these two activities separate.

One virtue of the past year has been the increasing sense of organisation which has gone to selling microcomputers. Having floundered for several years, during the transition from the hobby-enthusiast cult to proposals for both home and business computing, most vendors now offer realistic training sessions at reasonable prices.

New software is being written — much of it in Australia — which will help novice users in ways not tried before. The industry is extremely competitive.

If a few standards both in equipment and service can be decided on in 1984, the predictions of a computer in almost every home or office may well be fulfilled before the end of the decade. □

Brave new world

Tony Adams reviews 1983 educational progress, and points to areas worth watching in 1984.

NINETEEN eighty-three was very much a year in which Australia discovered educational computing. The federal election, while not being fought on educational computing policy, did uncover the remarkable fact that both major political parties had developed policy in the area.

Neither party had obviously put much time into the exercise. The Liberals simply had retyped the Schools Commission plan for spending $A100 million over four years, comfortable in the knowledge that they probably weren't going to be in power and therefore didn't need to worry about implementing it.

Labor, on the other hand, had come up with a lashed together bit of nonsense that talked of giving every State secondary school a handout to buy hardware. Fortunately, reasons prevailed, and the new government took advice that their policy wasn't worth a bumper, and set about putting it to rights.

The result was a directive to the commission to come up with the guidelines of how to spend about $6m a year over three years. A national advisory committee was set up by the commission, which became known as "Nackers" — at least to its friends.

The advisory committee, in turn, formed some working parties, and everyone got down to the business in hand. The report is now "out to interested parties" for comment and will go to the government before Christmas.

Those looking for the report to be a blueprint that charts new directions with great clarity, intellect and wisdom probably will be disappointed.

"Nackers" is made up only of people, who it seems to me, have been successful in reconciling the different approaches and prejudices of its membership, largely made up of state education departments, private school systems, womens groups, unions, etc. I served on the hardware working party and was prepared for a "bun fight" given the wide membership of the group.

I must say I was impressed by how the working party addressed its terms of reference without the rancour and infighting that can so often mar these execises.

In as much as the report accepts that questions of curriculum and training are much more important than hardware purchase, it will help to ensure that the federal component of computing education money is spent wisely. That the report was ever *written* is a notable achievement in itself, given State rivalries.

Six million dollars is not a lot, but one would hope that like the MEP funding in the UK it will be continued past the initial time of three years and increased along the way. Much of the effort that was necessary to get the report from an idea to a reality, came from the commission's consultant, Peter Sandery, who spent much of the year travelling from meeting to meeting.

A highlight for me was the first Australian Computer Education Conference, held at Latrobe University, Melbourne, in May.

With the help of the Australian Computer Society and commercial sponsorship, three overseas speakers were brought out for keynote addresses. The speakers were chosen deliberately for being relevant to the needs of ordinary teachers. Certainly David Moursund Don Rawitch and David Squires all left an indelible impression on computing education in this country.

Nineteen eighty-three was also the "year of the contract" in computing education. Most (it may have been all) State departments were out to tender during the year for the supply of microcomputers.

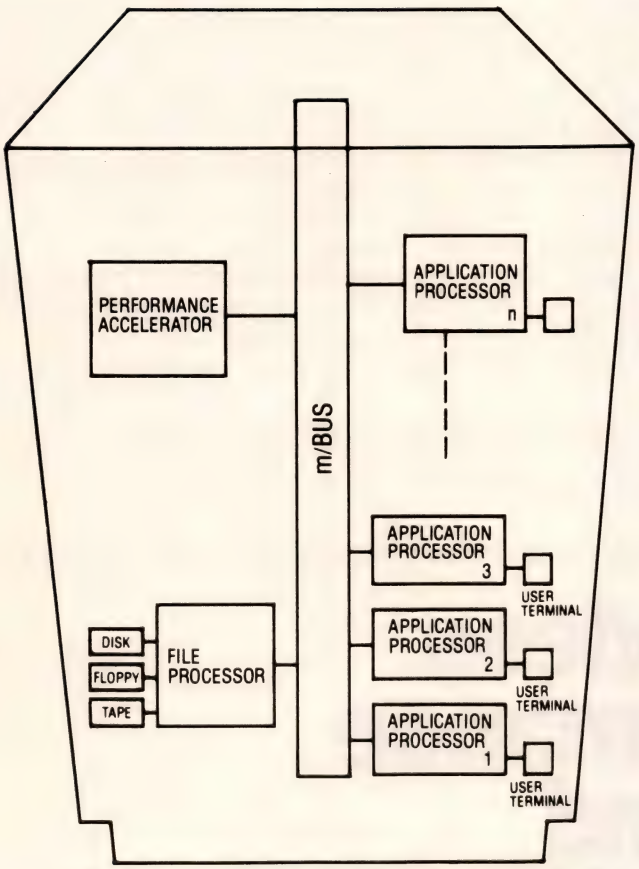
Looking at the results published so far, most of the old names appear, as well as several new ones. Despite harrassment from many quarters, the Apple IIe continued to be widely supported, proving once again that it you have the software, the rest will follow.

The Acorn BBC continued its popular growth and started picking up the deficit in software that it had previously faced. It remained difficult, though, to see why the Beeb should be so expensive in Australia.

Star turn of the year was undoubtedly

(Continued on page 56)

When you've checked all the other supermicros
Talk to us about the best
THE MOLECULAR SUPERMICRO



The Supermicro's unique high-speed bus connects all users to a common data base (10 to 372Mbytes), shared peripherals and an optional Performance Accelerator.

Molecular Computer, the Supermicro Company, sets the standard for multi-processor, multi-user micro business systems.

Super Performance

A unique high speed interprocessor bus, m/Bus, and powerful network operating system, n/Star, are the basis of the Supermicro's super performance.

M/Bus supports communications between each user and a common data base and among independently operating users who each have their own processor and 64K of memory.

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Manufactured by Molecular Computer of San Jose California, the Molecular Supermicro is distributed and supported through the national network of Asia/Pacific Technology Marketing Pty. Ltd. (ATM).

Backed by the manufacturer ATM provides the highest level of support to its Molecular Supermicro dealers which in turn benefits you, the user.

And with Datronics, one of Australia's largest computer maintenance companies, ATM further supports Supermicro users with service across the nation.

Alan Heatley of ATM would be more than happy to tell you more about why Molecular is setting the standard in Supermicros.

Telephone Alan in Sydney on (02) 929 8455
or write to him for more information at

Asia/Pacific Technology Marketing Pty. Ltd.,
Ground Floor, 200 Pacific Highway, Crows Nest N.S.W. 2065.

Brave new world

(Continued from page 54)

the Microbee. The model 64 popped up in a number of States, and like the two previous machines, received the federal nod. Whether they can keep up the pace in 1984 will depend on whether the company can provide a wide range of educational software and can produce and support the hardware. The answer to either of these questions is not at all obvious, at least not to me.

Tandy continued to be a force in Queensland, but has not made official lists anywhere else. My own feeling is that this has more to do with Tandy's marketing style than with their products.

The major hardware development in 1983 was the range of cheap machines, notably the Commodore 64, the Tandy Color and the new Atari range. Suddenly it became apparent to a number of people that hardware would cease to be in short supply because of price.

Atari have led the way by being accepted on the NSW contract, as has the Tandy Color Computer in Queensland. State education departments that only support the more expensive machines on the basis of a wide range of software will find themselves justifying the unjustifiable and forcing users to make their own purchase decisions.

Still lingering in 1983 were the people who could hold up a single floppy disk and talk of covering history or geography or whatever. Hopefully in 1984 they will realise that we have a long way to go with software, and that really viable products will turn out to be produced by multidisciplinary teams and take umpteen man years to produce.

The largest States started hitting back in 1983. The common wisdom has long been that the smaller Staes have been light years in front of their larger neighbours.

Those of us in NSW, Victoria and even Queensland (yes, even Queensland) began to realise that real action had been going on for a long time, even if it wasn't being stage managed by central department-run groups. It even seemed possible that our smaller friends were busy locking themselves into strategies that would be difficult to escape from.

The most unsatisfied need in 1983 was not for hardware but for in-service training. Suddenly, every teacher wants to know how and why and where to use computers.

Personally, the most satisfying part of 1983 was in this area. In February, the CEGV decided to buy eight Apples and to offer them as a mobile laboratory to schools for their own use or with lecturers as an in-service. The scheme almost came unstuck when the banking system was less than helpful — a situation which resulted in some CEGV members accepting personal liability for the bank loan.

After seven months in operation, the scheme is surviving well and looking, towards new things to do in 1984. This type of outreach scheme, whether run by the education departments, tertiary colleges or professional groups, will be essential to success in 1984.

What will 1984 bring? Certainly more of the same, but also the introduction of 16-bit machines into education, more mature software products, and an effort to make an impact on in-service education. Micro Prolog will begin to make an impact, as will multiple player and animation software and hardware. Computers will begin to make inroads into primary education, and more computing education diplomas and higher degrees will be developed.

Nineteen eighty-four will be even more exciting, hard to keep up with, confusing, contradictory, and in many ways, more satisfying than 1983. Let's get on with it!

1983's top sellers

Four of Australia's leading software distributors publish their best-selling software lists.

US Apple magazine *Softalk* pioneered software best-seller lists in 1980. The monthly Top 30 selling programs became an arbitrator of successful software and part of the evolution of the software publishing industry.

Work-alikes that offer marginal enhancements are always at a disadvantage. Two examples of this process are the success of Bank St, Writer which swept other Apple word processors before it by offering an innovative approach.

Similarly, Microsoft Word, threatens to do the same to IBM-PC word processors. Entertainment software tends to follow the same sales curve as popular records, books and video movies, although classic programs have remarkable staying power, as evidenced by Choplifter.

These lists reflect sales in Australia in the first months of 1983. They indicate the dominance of word processing and data management software.

The strong showing of educational software on the Commodore list and the programs on Imagineering's Commodore 64 and Apple lists will reassure those people who believe low-cost personal computers can be used for useful applications. The main difference between these lists and similar lists published for the US market is the absence of communications software.

Imagineering

Vic-20 (unit sales)

1. Choplifter
2. Video Vermin
3. Serpentine
4. Turtle Graphics
5. Apple Panic
6. Heswriter
7. River Rescue
8. Shamus
9. Type Attack
10. Synthesound

Vic-20 (dollar sales)

1. Choplifter
2. Video Vermin
3. Turtle Graphics
4. Serpentine
5. Apple Panic
6. Heswriter
7. Shamus
8. Type Attack
9. Synthesound
10. River Rescue

Commodore 64 (unit sales)

1. Turtle Graphics
2. Frogger
3. Heswriter
4. Jumpman
5. Choplifter
6. Gridrunner
7. Repton
8. Hesmon
9. Mastertype
10. Omnicalc

Commodore 64 (dollar sales)

1. Turtle Graphics
2. Motor Mania
3. Frogger
4. Jumpman
5. Choplifter
6. Repton
7. Gridrunner
8. Heswriter
9. Hesmon
10. Grandmaster

Atari (unit sales)

1. Frogger
2. Jawbreaker
3. Jumbo Jet Pilot
4. Zaxxon
5. Submarine Commander
6. Gridrunner
7. Choplifter
8. Juice
9. Genetic Drift
10. Labyrinth

Atari (dollar sales)

1. Frogger
2. Jawbreaker
3. Jumbo Jet Pilot
4. Zaxxon
5. Submarine Commander
6. Choplifter
7. Gridrunner
8. Juice
9. Genetic Drift
10. Labyrinth

Commodore
Bus. machines

Vic-20 (unit sales)

1. Introduction to Basic Part I
2. Introduction to Basic Part II
3. Avengers
4. Sargon Chess
5. Gorf
6. Cosmic Cruncher
7. Omega Race
8. Radar Rat Race
9. Star Battle
10. Raid On Fort Knox
11. Super Lander
12. Pinball

Commodore 64 (unit sales)

1. Introduction to Basic Part I
2. Gortek and the Microchips
3. Easy Script
4. Radar Rat Race
5. Jupiter Lander

Commodore 64 (dollar sales)

1. Easy Script
2. Introduction to Basic Part I
3. Gortek and the Microchips
4. Radar Rat Race
5. Jupiter Lander

Apple (unit sales)

1. Bank St Writer
2. Mastertype
3. Zardax
4. PFS File
5. Home Accountant
6. PFS Report
7. Choplifter
8. Wizardry
9. Zaxxon
10. Flight Simulator

Apple (dollar sales)

1. Bank St Writer
2. Zardax
3. Mastertype
4. PFS File
5. DB Master
6. dBase II
7. PFS Report
8. Home Accountant
9. Visicalc
10. Visifile

IBM-PC (unit sales)

1. dBase II
2. Flight Simulator
3. PFS
4. Quickcode
5. Wordstar
6. Visiword
7. Zork I
8. Visicalc
9. Visispell
10. PFS Graph

IBM-PC (dollar sales)

1. dBase II
2. Quickcode
3. Visiword
4. Visicalc
5. Wordstar
6. PFS
7. Flight Simulator
8. Visispell
9. Visischedule
10. Visifile

Software Corp of Aust

1. Wordplus PC.
2. Data Base Manager II.
3. Multimate Word Processer.
4. Wordplus PC plus Boss.
5. Lotus 1-2-3.

Computerland

Hardware (dollar sales)

1. Lotus 1-2-3
2. Word Perfect
3. Wordstar
4. Multiplan
5. dBase II

Software (dollar sales)

1. IBM
2. DEC
3. Apple
4. Hyperion
5. Texas Instruments

unison SUPERMICRO

Australian computers you can build a system on.

The problem with most PCs is they are generally single-user, single-tasking, floppy based machines. You can't add another user with access to the same data at the same time – and you can waste a lot of time waiting for the printer to finish before you start the next job.
But PCs are cheap. And that's why people buy them. Even when the job at hand may really need a small minicomputer.
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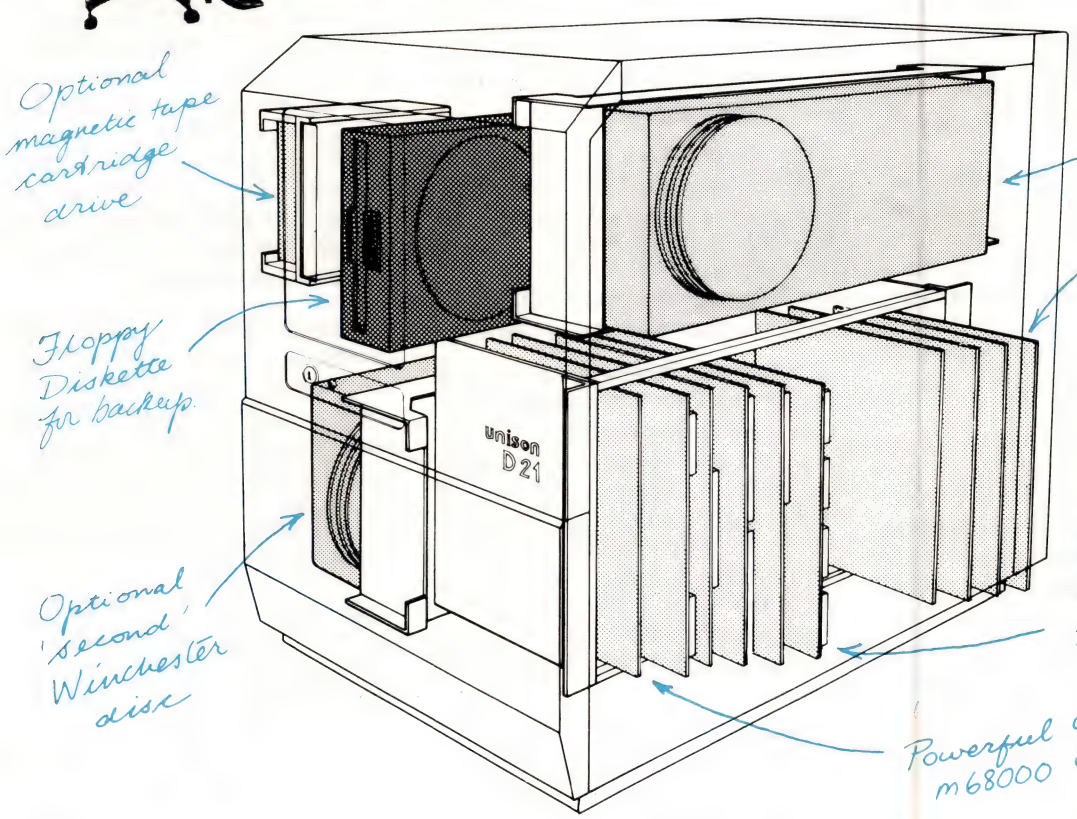
And if you need more... like some mature COBOL and BASIC application modules, UNISON can offer these too.
*UNISON supermicros start at around the same price as a top end PC. Interested ...then contact Email Computer Systems on **(03) 728 4511** or send in the coupon.*



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Companies comment on '83

Nigel Shepard Commodore

THE following are the major points we would like to make in regard to performance in 1983 and our forecasts for 1984:

In a way we are uniquely positioned to comment on the growth of the industry in 1983, as there is little doubt we hold the major market share for home and personal computers under $A1000 retail. Indeed, we will be very close to our targeted sales of 100,000 units for the calendar year, and if we had not been affected by stock shortages of both the Vic-20 land Commodore 64 we could have increased this about 20 per cent. However, of major significance to us was the very high proportion of disk drives and printers sold, which indicates that many of these machines are being used for programming and business applications and not only for playing games.

As far as 1984 is concerned, we have no reason to doubt we will increase our sales about 100 per cent. The Commodore 64 has built up a tremendous momentum and with the Executive 64 due for release in Australia in January we expect to dominate both the low-cost PC market and the portable market.

We should also make mention of our 8000 and 700 Series. Although the VIC-20 and Commodore 64 have been responsible for most of the publicity surrounding our product, we also have a very healthy business in the small business systems area (we don't call these machines PCs). We sold around 1000 of these in 1983 and expect to double that figure in 1984 — many of the more "fashionable" desktop suppliers would envy these sales figures.

David Strong Apple Computer

APPLE Computer Australia faces 1984 with an optimism reflected in budget sales targets about 100 per cent ahead of those achieved for the year to October 1, 1983, according to Apple managing director, David Strong.

The Australian company increased personal computer sales 112 per cent in the last financial year, while Apple internationally increased net sales 69 per cent. Apple international revenues have increased 700 per cent over the past three years and the company boasts huge cash reserves after increasing 1982-83 net profit 25 per cent.

Echoing Apple chief executive statements from overseas, David Strong indicates that 1984 and on-going Apple success will relate to research and development strength, where more than $US50 million will be invested in the current Apple year, although recent profitability levels are predicated to be maintained.

"Apple is the innovator in personal computers. The company has maintained its leadership in personal computers by staying on the leading edge of personal computer development, and making high quality, innovative, affordable and useable machines," said Strong.

"One of the main products launched in 1983 was Lisa, a revolutionary management decision support tool. State-of-the art hardware, combined with integrated and revolutionary software, Lisa represents a $US50 million and 200 person year investment.

"Lisa offers unparalleled ease of use and versatility for management applications, with extensive built-in graphics, consistent user interface, and a pointing device (called a mouse). By emulating, but greatly facilitating, the way an individual would work in the office without the aid of a computer, Lisa is the first in a new generation of office machines from Apple and sets the standard for future personal office systems.

"1984, which Apple refers to as 'The Year of the Mouse' will see many further developments in Apple's current line including a mouse for the Apple IIe, and the launch of new threshhold products featuring 68000 processors down into the mainstream of the market," said Strong.

Werner Faets DEC Australia

IT HAS been an exciting year for Digital. We entered the market in February with a $A1 million launch for personal computers and set new standards inside the company and in the market. From nowhere, we achieved our goal of becoming one of the top players in the PC area. We did this in spite of having to develop distribution and marketing techniques and mechanisms for the first time in DEC's history.

It was a tough year, with many people working extremely hard. At year's end we have achieved a sound distribution policy, the industry's best dealer support strategy, a complete line-up of five personal computers engineered to the highest standards, and hundeds of application software packages available.

Our sales during 1983 were higher than anticipated, with the usual mix of good and bad news. Decmate II has established itself as an industry leader with sales way above expectations, although the Professional Series has been lagging due to lack of software in the early days. The Rainbow was a strong seller throughout the year and the new Rainbow Plus is showing itself to be a record breaker.

Looking ahead to 1984, Digital is poised to capitalise on the standards and policies it set in 1983, namely: *12 months on-site warranty; 12 months telephone support for software; 60-strong dealer network; new end-user distribution strategy; the best line-up of personal computers in the industry; and the industry's best dealer support plan.*

We will introduce new products — both hardware and software — to become leading edge suppliers and not just take a "me too" approach. We have a hardworking professional marketing team in place and desire to be number one. We listen to our dealers and know we can do it. It will be an exciting year in the business, with a few more major shakeout casualties and many small ones. Digital is superbly placed to be number two, aiming at number one. Our 26-years of computer experience will give us the edge in office automation, networking and videotext markets. In the standalone PC space we have the solutions and the hardware and software in stock to meet the demand.

Don McEwan
B & S Microcomp

DURING 1983 we have concentrated on developing long-term business potential in the corporate market place. After a fairly slow start this area is showing signs of explosive growth.

Being a supplier of the IBM Personal Computer we have chosen to work with IBM mainframe accounts, who usually prefer the IBM PC for its versatility in communicating as a terminal and its assured long-term viability. Those responsible for policies and decisions on acquiring personal computers had a tough time in 1983. The market has changed so dramatically that standardisation has proved almost impossible. It is a full-time job just keeping up. For our part, we have tried to make their job easier by providing the products and assistance they need to finalise their evaluation.

For many of these accounts the first machines have been installed, and their effect is being closely monitored. There is no doubt these will lead to tens or even hundreds of new machines in years to come. It is only a matter of when the flood gates will open. For some it will be 1984.

One factor delaying installation is the potential user's ability to come to grips with the machine. Education will play a big part in opening up the market to its full potential, and we have plans to contribute in this area. In January, 1984, we will open a training centre in Bourke Street, Melbourne, which will allow each attendee his own fully configured IBM PC to work on. Content will range from introductory sessions for beginners to more advanced courses, and we hope to run a series of topical seminars throughout the year.

Heimo Eberhardt
Labtam International

NINETEEN eighty-three has been the best year Labtam could possibly have expected, exceeding our wildest forecases. At the end of November, our sales exceeded $A5 million, with 90 per cent of systems sold to the export market.

The technical excellence of our system has been the driving force behind our growth, with the flexibility of the upgarde path and the ability to use CP/M-80, CP/M-86, MP/M-86, MS-DOS and Unix on the one system illustrating our strong points. The prospects for 1984 are extremely good.

We will release a range of color terminals in 1984 as well as a 32-bit processor in February-March concurrent processing by the last quarter and open a Sydney office.

Our disappointment with the acceptance of Australian designed and manufactured computers led us to seek out export markets, but we have always believed that a strong local market is essential to support a computer export industry.

The most satisfying part of 1983 has been the acceptance of an Australian industry and we support all of the activities of the Commonwealth and State governments in this area.

We expect to double and possibly treble our sales in 1984!

Mike Dewhirst
The Dewhirst Corp

1983 was the year we designed, built and launched the Data Base Machine. This was, we believe, the most significant new data processing system to reach the market anywhere in the world in 1983.

Nobody should be startled that this breakthrough is entirely Australian. Australians are slowly but surely recognising that native high technology can in fact lead the rest of the world.

Thankfully, we are no longer inclined to "knock" Australian achievements out of embarrassment or an unwarranted inferiority complex. Part of the marketing effort for the Data Base Machine is educative.

People with data processing problems have to be shown the difference between a computer (micro, mini or mainframe) and the Data Base Machine. They need to learn the difference between a number cruncher and a data cruncher.

"Instead of being impressed by Mips or M-flops a second they need to understand why M-bytes a second are so much more important. We see 1984 as the year of information management.

Whether it is self-fulfilling prophesy or not, Orwell's *Nineteen Eighty-Four* seems to have predicted uncannily the enormous emphasis many organisations are placing on high-speed storage and retrieval of information. With a speci of our Data Base Machine in front of him, George would not have changed a word.

"The Data Base Machine is the first of a range of data crunchers we will produce over the coming years. Already it has proved enormously successful and we are totally confident it will put Australia on the world data-processing map in 1984.

Nick Padol
Computerland

THE changes that have occurred within the Computerland network in Australia — typify changes that currently prevail in the computer industry — and its distribution channels. Internationally, Computerland has experienced phenomenal growth, with the company doubling in size every year since 1977.

Sales of more than $US2 billion are forecast for 1984 through the 550-store network. Computerland is IBM's single largest customer — bigger than the US Department of Defence!

In 1982, Computerland stores in Australia featured Apple and Osborne products as best sellers. In less than 12 months, in 1983, this product mix changed considerably. In February, IBM released its long-awaited Personal Computer, followed soon after Dec's Rainbow range.

There has been a consolidation and reinforcement of Computerland's operations. Two new stores, Belconnen in the ACT and North Sydney were added to the network during 1983. Ten new stores are planned for 1984 to strengthen the nationwide coverage.

A new management team, headed by Darryl Rudolph, has restructured the Australian operations, culminating in the opening of new corporate headquarters and distribution centre at Frenchs Forest, near Sydney.

Computerland's trend towards strong business and corporate-oriented sales reflects the bias of the group worldwide, away from the "byte head" or hobbyist market, which helped launch the business in Australia. Research conducted in 1983 revealed that Computerland stores were being perceived more as business solution centres, offering small to medium-sized businesses and large companies alike — the opportunity to optimise their executives' skills with the use of micro computers, by utilising the excellent and practical software programs such as Multiplan & Lotus 1-2-3.

All Computerland stores provide comprehensive support, technical service and training to back up the sales effort. A major element in Computerlands marketing strategy is the creation of Computerland learning centres, providing professional education for all levels of computer literacy as well as conducting specific interest programs, thus catering for as broad a cross-section of computer users as possible, from novice to programmer. □

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If we were to ask, "Would you like more orders for your business?" We could confidently predict the answer. But how to generate those extra enquiries that can be converted into sales? ... That's the trick.

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Fresh directions for Microbee

WITH 20,000 units in the field in Australia and its original design starting to show signs of age, Applied Technology has put together a range of initiatives for 1984 which should give its educational clients assurance that they will be able to continue developing with Microbee, keeping close to the state-of-the art without having to write off any earlier purchasers. Among the anticipated offerings are:

■ A star local area network (LAN) using 15-core cable with standard 25-pin connectors for parallel data transmission, the network providing shared access to common-disk files plus read write access to separate areas identified by user name and password.

■ A geographic network for Microbee users to swap software, etc., using a Microbee LAN with local hard disk at the central end instead of the traditional minicomputer solution.

■ An "anti-production" line into which old Microbees can be put, disassembled and then reassembled with all required upgrades and new options, so no Microbee ever becomes worthless.

■ A portable keyboard computer with built-in liquid crystal display and attachable numeric pad containing modem which can double as a telephone and which will be able to function as a full Microbee when connected to an external display, LAN or disk drives.

■ A daisywheel printer for less than $A500.

■ A 128K-byte version with memory bank select as a possible step to CP/M 3.0.

■ An expectation that Microbee's established price range will be maintained with the inclusion of some currently optional features, such as color, in standard models as technology permits.

Microbee 64K computer, with monitor, double disk drives, and dot matrix printer.

Beyond the Christmas rush, Applied Tech was working on $A1 million worth of back orders for schools systems to be installed in January.It has established OEM agreements with the key software suppliers, Digital Research, Microsoft and Micropro, so that it can package Multiplan and Wordstar on the single disk drive Microbee 64 for $A1495 tax paid — a configuration for which there is simply no competitor.

Hong Kong-assembled Microbees are selling well in four Scandinavian countries, with all support now ex-Australia.

Applied Tech sets targets

TALKING to Owen Hill about plans for Applied Technology and Microbee for 1984, he gave a strong impression of considering the new year as offering some major challenges which he said his products had to meet if they were to expect to still have a market at year's end.

Hill says computer selling will move from "computers are good for you" to "what are your needs?" as buyers become better informed. That will lead to what he calls "purpose built computers" which meet particular market requirements.

He sees Japanese technology leaving the US behind in key areas, facilitating the true realisation of the Dynabook concept towards the end of the year. LCD displays are expected to leap from their soon to be available by 16 format to a full A4 size with the same resolution.

As in the latest digital watches, design is underway on a touch-sensitive panel to sit behind the LCD as tomorrow's alternative to conventional keyboards. Beyond specialised areas of Japanese excellence, Hill sees inadequacies in US and UK efforts leaving greater room for Australian developers to capitalise on their native use of English.

Communications and networking is his other key emphasis.

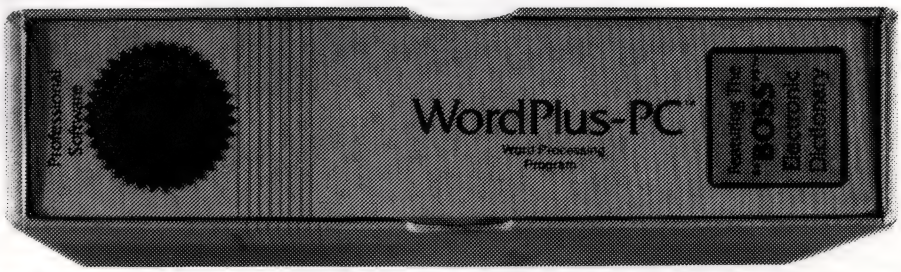
Magnum corks pop

THE remarkable development record of Australia's own state-of-the-art portable, Dulmont's Magnum, continued as the second batch off the production line went out to selected customers without any early returns to correct problems. As well as its MS-DOS operating system, word processor and spreadsheet, Dulmont was packaging a partially completed diary-planner package early in December.

Two more batches of 100 Magnums each were expected off the line by the middle of that month, with the first of the matching twin disk drives following before Christmas. Software development is continuing to round out the range of offerings already documented in Magnum manuals, and the unit reportedly is attracting attention from the army of local third-party software houses.

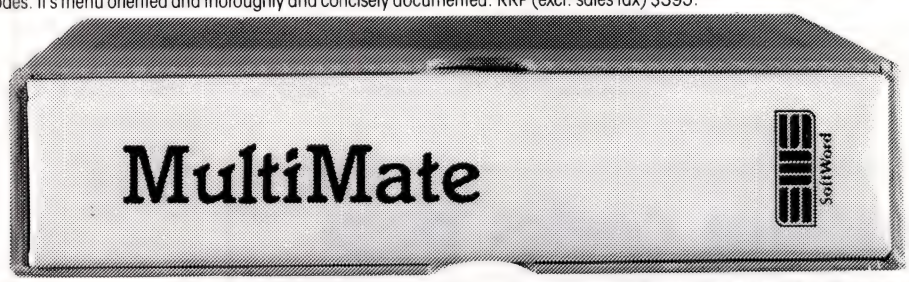
Soft Solutions for Hard Times

Business is tough today. Tougher than it has been for years. That's why you need all the help available to you just to maintain that competitive edge. Computers offer a new world of management advantages and profit-oriented insights. But you've heard and read that a computer is only as good as the software running on it. And software means hiring expensive programmers to custom-design a suite of applications for your company or firm. Right?
Wrong. The microcomputer revolution has brought some pretty big changes. Including a revolutionary new approach to business software. Today more and more off-the-shelf business software packages are available. For a broad and increasing range of businesses. Including yours.
At SCA we have scoured the world's software centres. And we have introduced into Australia a range of ready made, flexible computer software for business. Primarily designed to run on the successful IBM Personal Computer and other 16-bit microcomputers.



If word processing is a new concept for you, then WordPlus-PC may be just the right approach. One of America's most successful word processing packages and one of the easiest to use, WordPlus-PC includes a powerful merge capability which allows you to send personalised standard letters to large numbers of addressees. As well as a complete range of sophisticated word processing functions, WordPlus-PC is also available with The Boss, a unique on-line spelling check function containing an electronic dictionary of more than 90,000 words. Have your dealer demonstrate to you the power of WordPlus-PC featuring The Boss. Now available for the DEC Rainbow and the Texas Instruments Professional as well as the IBM Personal Computer. RRP (excl. sales tax) WordPlus-PC $395. WordPlus-PC featuring The Boss $525.

Data base management used to be confined to professional programmers. But with DBM II, an inexperienced computer user can prepare comprehensive and detailed reports on all aspects of his business. For example, using DBM II and your IBM PC, figures computed on your spreadsheet can be put into on-screen forms which you design, then printed out in the form of personalised letters using your word processor. DBM II is completely compatible with Lotus 1-2-3, MultiPlan, VisiCalc, WordStar, WordPlus-PC and other leading programs. DBM II is designed to be operated by non-technical users and does away completely with hard to remember codes. It's menu oriented and thoroughly and concisely documented. RRP (excl. sales tax) $395.



If you love your IBM PC but still look covetously at your neighbour's Wang word processor; if you wish you could identify and move a block of copy about as fast as you could point to a "before" and "after"; if you want to zip from page 78 of a document to page 4 in only three key strokes; then MultiMate is for you. MultiMate was designed to bring Wang-like dedicated word processor power to IBM PC. For professional word processing, it's MultiMate. RRP (excl. sales tax) $595.

Computerising can be a difficult process. That's why we have ensured that all SCA products are well documented, ready to run and easy to use. But if you do strike trouble, our Customer Support Hotline is just a phone call away. At SCA we offer a full range of customer support services, all designed to ensure that you get the maximum possible benefits from your SCA product. As a registered SCA product owner, you will have access to

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If you want some more information about what SCA's fine software can do for you, it's yours for the asking. Just telephone or send us your business card. SCA products are available from selected computer dealers throughout Australia. Call us for the location of the dealer nearest you.

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Enter N025 on Enquiry Card

Is now the time to invest in Apple Computer?

US stockmarket reviews Apple

The company's stock has been driven from a high of $63.25 a share to below $20 (as of October 24, 1983). Its market valuation — outstanding shares times price — has dipped to within striking distance of a year's revenue. Its P/E ratio looks like something an electric utility dragged in.

The stock took a double slam. In July, rumors that the IBM Peanut would be announced before Labor Day started Apple's stock price sliding down from its June above-$US50-per-share plateau and precipitated the whole high-tech downturn. In September, Apple announced that earnings for its fourth fiscal quarter, ending September 30, would be a fraction of what they had been a year earlier.

Now the company that led the personal-computer revolution, that grew to billion-dollar status in a half-decade, is being shunned.

Which means now may be the time to buy, for several reasons:

- The Peanut damage is done.
- Apple is cleaning house. The firm is following standard procedure. Once a company knows it's going to take a licking on Wall Street, it might as well pour on the bad news; that is, write off as much as possible, institute layoffs and revamp supplier relationships.
- Apple still has clout. For all its current travails, the company has plenty of marketing and R&D muscle.
- The company is financially sound. As of midsummer, for instance, the company had more than a quarter of a million in cash, no bank debt and more than three dollars of current assets for every dollar of current liability.
- 1984 is an election year. The market should mirror a politically pumped-up economy, which will help all stocks, Apple included.
- Woz is back.

Here's a company, then, with tremendous long-term investment potential. In a few years, Apple's revenues will be in the multibillion dollar range, which will be enough to support earnings of $4-$5 a share and a P/E close to its growth rate.

In the meantime, the stock remains poxed. I predict, however, that once Peanut and Macintosh debut, Apple will begin its long climb back to respectability.

For the record, we should state that we think Apple isn't the only major personal-computer supplier undervalued now. So are Commodore and Tandy.

The numbers in the accompanying chart — particularly P/E-to-growth rate and price-to-book value — illustrate the extent of the stock-price shortfall. We've included IBM and Digital Equipment in the chart to serve as reference points.

Commodore is a pure personal-computer play and riskier than Tandy because of its low-end-only product environment, but the company seems to have won its four-front war with TI, Atari and Mattel. It's also extremely good at volume manufacturing. The company is more highly leveraged than Apple or Tandy, but its stock price, fallen from a June high, generates a P/E low enough to make self-respecting speculators lick their chops.

For our money, however, Tandy is even more seriously underestimated than Commodore. □

John Gantz is editor of the Tech Street Journal. *The opinions expressed herein are those of the writer and not necessarily Australian MicroComputer.*

Personal Computer Company Stats

Company	12-month Hi	12-month Lo	Price at 10/21	P/E	P/E % of Growth	Price to Book	Valuation
Apple	63.25	18.38	19.88	11	0.44	3.6	$1188M
Commodore	60.62	23.25	37.62	13	0.43	6.9	$1160M
Tandy	64.50	34.50	36.62	13	0.72	2.6	$3803M
IBM	134.50	79.12	127.00	15	1.07	3.6	$76950M
DEC	132.12	66.50	67.50	14	0.63	1.2	$3825M

Snapshot

John Dvorak and staff writers

Rumour of the year

WITHOUT so much as a helping hand from its non-favourite people in the US Justice Department's Anti-Trust division, IBM is likely to hive off voluntarily, some of its activities into separate companies. Particularly in mind are any IBM divisions which divert the giant from its principal activity — the supply of large computer systems.

Its own finance company which provides lease and rental contracts for the supply of IBM equipment has already been established as a distinct corporate identity and is obviously first cab off the rank because of its different cash requirements which at times have impinged on Big Blue's main goals.

Two other candidates recently added to the list are its pure research areas, on the grounds that they are a prime target for speculative investment, and the Entry Systems Division built around the highly successful Personal Computer manufacturing operation at Boca Raton, Florida.

The excuse for separating the PC from IBM's larger computers is that, although highly profitable, its $US1 billion revenues are still a small percentage of the corporation's total $US30 billion plus. But as such they have introduced IBM to price discounting, lthe demand for which is spreading across the full range of products, putting at risk a significant portion of the revenues of the profit-conscious giant.

Based on the incredible hype the PC is attracting, Entry Systems would be an historic float on Wall Street, possibly raising more than $US10 billion in capital, leaving the company with a similar stake which it has from time to time taken in companies such as Intel with which it wants a long-term relationship. For those who subscribe to sinister interpretations of IBM's every move, the company with an extra $US5 billion cash and Entry Systems with $US5 billion cash could be seen as particularly dangerous animals.

An interesting analogy

A LEADING local industry observer, Management Technology Education Pty Ltd director Chris Carvan, has produced an interesting comparison between the evolution of pharmacists and of computer software suppliers.

In the early days of pharmaceutical chemists, university training was important to enable them to diagnose informally a patient's requirements and mix up appropriate chemicals to at least ease the symptoms. Today, pharmacists usually repackage somebody else's pills in accordance with another person's prescription of the patient's needs.

Already, the supply of software is moving solidly from custom preparations to the selection of packages, leaving Carvan doubting whether the Australian Computer Society will be able to maintain a minimum qualification standard as the pharmacists did.

Digital audio data

SONY and Phillips have released details on a read-only memory device based on the compact disk digital audio system. A 12in compact disk can store 550M-bytes of data and uses the same player and disk as the compact disk digital audio system now entering mass production for the consumer market.

MS-DOS TRS-80

IT LOOKS as if the IBM-compatible MS-DOS TRS-80 is a sure thing, due to come out in the first quarter of next year. The company already has showed the motherboard to the technicians.

The new motherboard is a little larger than the TRS-80 Model 4 or Model 16 main boards, so it will go into a completely redesigned cabinet.

Victor stays put

MEANWHILE, a Victor Technologies vice-president called to assure me that Victor does not plan to move its headquarters from Scotts Valley, California.

But with an eye towards the current troubles Victor is experiencing in the US, Barson computers has signed a distribution agreement with UK manufacturer ACT for $US10 million worth of ACT's Apricot microcomputer over the next three years.

Elcon ponders future

AT HOME, the long-term future of former Apple distributor Electronic Concepts Pty Ltd is subject to almost as much speculation as IBM's next Entry Systems product — particularly with Elcon's several changes of direction, including closure of its Melbourne office, in the past few months.

Primary focus for that speculation also is based on the prospect of a US float, this time of Elcon's highly successful, but little publicised, Los Angeles based circuit board manufacturing facility which counts among its many products, Microsoft's Softcard Z80 processor board and the Australian-designed Netcomm and Applecom cards. Such a publicly funded US operation would be expected to buy out Rudi and Lorna Hoess's equity in Elcon, leaving Lorna in the managing director-cum-financial controller role of Elcon's continuing distribution of Corvus, Gavilan, several Japanese peripherals and some software products — a role she long filled with Computerland Australia.

Rudi would be freed from his unwanted day-to-day management responsibilities to concentrate his entrepreneurial and marketing talents on selecting additional products for the US manufacturing operation and the promotion of revolutionary concepts, including pioneering public information systems.

Jazz disks

HOT Stuff Dept. It started with a mysterious phone call. The voice on the other end whispered, "Dvorak, if you like colored floppy disks, then a new Silicon Valley start-up named Memron will blow your mind." I was intrigued.

If you're a software vendor that hasn't been secretly contacted by Memron yet, call the company at (408) 275 0780 if you're interested in this tremendous marketing tool. Memron has designed special equipment to do four-color lithographic printing on the vinyl diskette jacket.

The examples I saw were fantastic. The company starts with special white vinyl jackets and prints on them using custom-made presses.

The jackets are then folded around the media. The minimum order is as low as a thousand units.

Here's an opportunity for every egomaniac to put his or her picture on the floppy. You can have instructions for use printed on the disk jackets.

President Bill Bollinger told me that besides being a great merchandising tool, these disks have an antipiracy function. Whereas the colored label can be easily copied and printed in, say, Singapore, try copying one of these disks in a garage.

Already Visicorp, Information Unlimited and some of the other big firms have signed up to have Memron make their diskettes. I predict that within two years, the black diskette will be a curiosity. □

RANKED IN THE US TOP 30!
Each product marked ★ is ranked in the top 30 list of the best IBM PC software rated monthly by the authoritative US magazine "Softalk".

NEW RELEASES
from Sourceware's Software Supermarket

Sourceware is out to prove it has Australia's finest range of exclusive software for the IBM PC user. Here's just some of the top-performing unique software just released from Sourceware. Get the full details from your IBM PC dealer, or ring Sourceware for information or your nearest stockist.

AST RESEARCH INC

AST produce a range of IBM PC addon memory products which recently placed No. 1 in PC WORLD magazine user poll. These multifunction cards have memory from 64-512k as well as clock/calendar, Superdrive and Superspool software and extra serial, parallel and games output ports. AST also market full range of communication products such as IBM SNA, 3780, BSC and System 34, 36, 38 emulation cards as well as PC Net local area network systems.

★LOTUS 1-2-3

Rated No. 1 on "Softalk's" monthly rating of the best IBM PC software. With 1-2-3, you can be using your IBM PC in a surprisingly short time. Even if you've never been near one before. 1-2-3 instructs you right on the computer's screen in a friendly, helpful way, so you learn as you go along. Everything is in English, not code, so there's no new language to learn. There's even a special HELP key you can press to put special instructions on the screen if you can't remember what to do next. But for all its comforting ease of use, 1-2-3 is one of the most powerful programs available for the personal computer. It combines spreadsheet, information management and graphics all in one.

PLANFIN & PROFIN

The easy to use financial analysis and budget forecasting system written in Australia to our local business specifications. These packages have also received high acceptance in the USA as business planning packages that are easy to understand and extremely valuable in their ability to prepare spreadsheet data for packages such as 1-2-3, Visicalc and Multiplan.

GRAPHIC SOFTWARE SPECIALS

Sourceware carry a full range of business graphics packages for both dot matrix printers and colour plotters.

FASTGRAPHS	general graphics including "Slide Show"
GRAPHWRITER	advanced graphics
PRIME PLOT	CPM graphics for the SWEET-P and Apple
SWEET-PLOT-80	graphics package for OSBORNE, KAYPRO and NEC?

Here's more new releases from Sourceware:

DEALER ENQUIRIES WELCOME

SOFTWARE

★PC ARCADE	Arcade games
★FRIENDLYWARE	Intro set for new PC users
★TUTORIAL SET	Professor DOS/Instructor Training set
PC DOCUMATES	Keyboard templates for all major packages
EASYWRITER II	Word processing including Easymailer and Easyspeller
★TIM III	Database manager
FAST FACTS	Personal filing and reporting package
PROKEY	Keyboard programming utility
SIDEWAYS	Vertical print utility
APL PLUS*PC	APL programming language for the IBM PC
★CROSSTALK	Communications and terminal emulation program

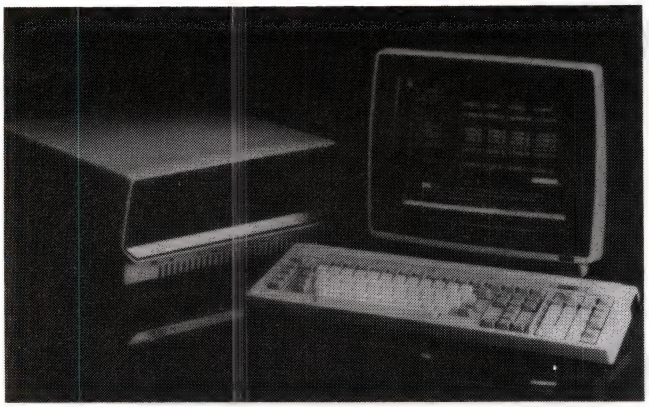
HARDWARE

IRMA BOARD	IBM 3278, 3279 terminal emulation card
PCI 1051	IBM SYS 34, 36, 38 – PC interface
PCI 1076	IBM SNA/SDLC – PC interface
SWEET-P	12 Colour graphics plotter

SOURCEWARE
4/73 Albert Avenue, Chatswood, NSW 2067. (02) 411 5711

The Source of Software S07.FPC

Altos' complete system



A COMPLETE microcomputer system with matching software, developed for all types of small to medium-sized business has been released by 77 Systems (Australasia) Pty Ltd. Hardware comprises the Altos Model 580-10 microcomputer which has 192K-bytes of memory, a 10M-byte Winchester hard disk, either one or two terminal displays, and a 200 char/sec dot matrix printer.

The matching software developed by 77 Systems includes word processing, spreadsheet, sales/-order entry, invoicing, inventory, accounts receivable and payable, general ledger and financial reporting.

Further information: 77 Systems (Australasia) Pty Ltd, 84 Pacific Highway, St Leonards, NSW, 2065. Tel: (02) 439 5577.

Enter N510 on Enquiry Card

Latest Alpha

CONCISE Data Systems has launched the latest Alpha Micro system in Australia. The 70M-byte AM-1072 is a medium-size system within the range. Concise Data says the AM-1702 also is oriented towards manufacturing, engineering and scientific organisations, where Fortran is required to run in the mix. For engineering and scientific applications, the AM-1072 would allow programs up to 8M-bytes in size to run on the full Ansi 77 Fortran compiler. The AM-1072 is based on the 16/32-bit Motorola 68000 microprocessor, and is capable of running 48 terminals and printers in a number of configurations. The system entry-level memory capacity is 512K-bytes, which can be expanded to 4M-bytes. The standard 70M-bytes storage capacity can also be expanded to 280M-bytes by adding more disk drives, and to 560M-bytes with an extra controller. The AM-1072 features a high-speed Winchester disk drive.

Concise Data says the system is software compatible with other Alpha Micros. The AM-1072 also is said to have IBM 2780/3780 RJE bisynchronous communication as an option which facilitates communication with other Alpha Micro systems as well as most other mainframes.

Further information: Concise Data Systems Pty Ltd, 795 Pacific Highway, Gordon, NSW 2072. Tel: (02) 498 8399.

Enter N512 on Enquiry Card

Micros on DEC

THREE new board-level 16-bit microcomputers that enhance power and performance of both ends of its LSI-11 (Q-bus) microcomputer have been released by Digital Equipment Corp. The microcomputers include the KDJ11-AA (LSI-11/73) DEC's most powerful 16-bit microcomputer. Based on the J-11 microprocessor, DEC says the new high-end model has functionality equivalent to a PDP-11/70 minicomputer. The KXT11-C microcomputer which can be used as a general-purpose peripheral processor or a single-board computer also has been released along with an enhanced version of the entry-level Falcon SBC-11/21, the single-board microcomputer, Falcon-Plus, which supports the RT-11 operating system. DEC also has announced two new versions of its Micropower/Pascal software and a 12-month return to factory warranty for the new microprocessor boards.

Further information: Digital Equipment Corp (Australia) Pty Ltd, Chatswood Plaza, Chatswood, NSW, 2067. Tel: (02) 412 5252.

Enter N513 on Enquiry Card

Prest Chieftain

PREST Computers has been granted Australian marketing rights to the Chieftain Series 6809 computer systems manufactured by Smoke Signal Broadcasting of the US.

Initially Prest will market only the Chieftain range — to be called Prest in Australia.

The multi-task, multi-user systems support up to 16 terminals), range from low-end 5in and 8in floppy disk-based units to 5in and 8in hard-disk configurations of 4M-byes to 60M-bytes capacity. They have an optional OS-9, levels one and two, operating system. A Unix-like system, it is designed especially for use with 6809 processors and allows the use of more than one terminal at a time. Basic-09 gives full access to the operating system's features. Other languages available for the range under OS-9 include CIS Cobol and Pascal. If the standard DOS single-user operating system is used, Basic and Pascal are the available languages.

Further information: Prest Computers, PO Box 2018, North Parramatta, NSW, 2151. Tel: (02) 653 1557.

Enter N514 on Enquiry Card

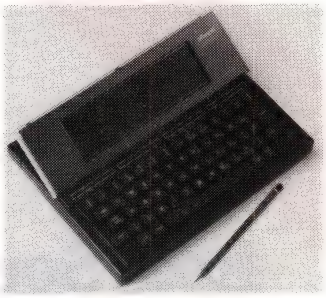
University compact

UNIVERSITY Computing Co has released the SMS-MDX-11 NC microcomputer, a tabletop micro which comes with an 8in floppy disk and a 16M-byte Winchester as standard. The floppy disk supports DEC and IBM formats and is said to store up to 1.2M-bytes.

Further information: University Computing Co, Suite 3003, Westfield Shopping Town, Doncaster, Vic, 3108. Tel: (03) 848 9224.

Enter N515 on Enquiry Card

Olivetti compact



OLIVETTI has released the M10 Compact Portable Computer. The M10 is powered by batteries and has main power adaptor. It has a builtin liquid crystal display (8 lines by 40 char) and keyboard and has the OKI 80C85 microprocessor as its CPU. It has a maximum of 32K-bytes of CMOS RAM being expanded in 8K modules. Standard ROM is 32K expandable to 64K. The computer has ROM-based software packages. Centronics, cassete tape recorder, bar code reader and serial RS232 interfaces are standard. The 16K-byte version sells for $A995, while the 32K-byte unit sells for $A1320.

Further information: Olivetti Aust Pty Ltd, 140 William St, Sydney 2000. Tel: (02) 358 2655.

Enter N516 on Enquiry Card

Commodore releases portable

COMMODORE Business Machines has released a compact portable computer called the SX64. It has 64K-bytes of RAM, a 6in builtin color monitor, detachable keyboard and built-in 170K-byte floppy disk drive. A dual drive is available as an option. The SX64's processor is a 6510, and a Z80 microprocessor enables the system to use CP/M operating system. Basic V2 is resident in the system's ROM, and it also may use other languages including Pascal, Logo, Commal, Assembler and Pilot.

Commodore says the SX64 can use the large number of game cartridges available to the Commodore 64 family.

Further information: Commodore Business Machines, 5 Orion Road, Lane Cove, NSW, 2066. Tel: (02) 427 4888.

Enter N511 on Enquiry Card

Dyna-Switch MkII

DATACRAFT has released the Dyna-Switch Mark II range of tech control products. These front-end processor substitution systems have functions including A/B fallback switching of the RS232 interface between front-end processors (FEP's)/modems and full access patching for each data terminal. Several units also can be cabled together to implement a front end substitution switching system. Remote or local switching is available with the addition of a control module. The A/B switching function is implemented by using telephone-type relays that have a life expectancy of more than 10 million operations. Prices vary from $A5000 to $A10,000, depending on configuration.

Further information: Datacraft (Aust) Pty Ltd, Maroondah Highway, Croydon, Vic 3136. Tel: (03) 726 9911.

Enter N518 on Enquiry Card

Extended tape

THE DEI 555 cartridge, the first extended length 1/4in digital tape cartridge which is fully compatible with Ansi industry standard 300 and 450ft cartridges, has been released by Magmedia. DEI is one of the world's largest manufacturers of 1/4in cartridge magnetic tape and related systems. The 555 is said to 23 per cent more tape than a 450 cartridge, and can be used in drives to store up to 50M-bytes of data. The 555 is fully certified for use at 6400 bits/in and is tested on every track for the full length of the tape. It is designed and tested for minimal instantaneous speed variation and a consistent tension profile.

Further information: Magmedia Pty Ltd, PO Box 326, Lane Cove, NSW 2066. Tel: (02) 428 1100.

Enter N519 on Enquiry Card

Case agreement

AN AGREEMENT has been reached between Case Communication Systems Pty Ltd and Star Micronics of Japan on the marketing of their new range of dot matrix printers. Case, as exclusive Australian distributor, is now authorised to promote Star products under their original brand names of Gemini and Delta. Effective immediately, the currently known DPX range of 120 char/sec printers will be promoted as the Gemini-10X (80-col) and Gemini-15X (136-col). The more recent Delta printers offer 160 char/sec for the price of a 100 char/sec printer, and include both a parallel and a serial interface as standard. For the home computer market, the STX-80 thermal printer is available at 60 char/sec for $A295.

Further information: Case Communication Systems Ltd, 1-3 Rodborough Road, Frenchs Forest, NSW 2086. Tel: (02) 451 6655.

Enter N520 on Enquiry Card

Eprom burner

WARBURTON Franki announces that Data's I/O model 22A fully integrated personal programmer which can program more 550 devices, i MOS, Eproms and Eeproms, fuse link and vertical fuse will program MOS and bipolar Proms in the integral 28-pin socket and dual 20-pin adapter, and only three pin-out adapters are Ineeded for slim package devices and microcomputers. The units' removable lid stores two pin-out adapters — the power cord and the operator's guide. The entire system, which weighs 16 pounds, provides the same operator control and data manipulation capabilities as the top-of-the-line 29a UN Universal Programmer. The 22A includes System 19/29A computer remote control (CRC) software as well as 29A standard remote control (SRC).

Further information: Warburton Franki, 199 Parramatta Road, Auburn, NSW 2144. Telephone: (02) 648 1711.

Enter N521 on Enquiry Card

Storage box

THE Jed Datasafe is a new Australian-designed box said to hold 64 K-bytes of data safely and securely in any data gathering, machine monitoring, or recipe holding application. The data is locked away in a box full of lithium battery powered CMOS RAM against marauding power supply dropouts, shock, vibration, humidity, temperature extremes and passing time. The Datasafe is designed to replace cassette tapes, punched tape or EEPROMs with their high voltage requirements. The Datasafe does away with the need for cassette and floppy drives, or the complexities and power requirements of bubble memory.

Further information: Jed Microprocessors Pty Ltd, 28 Anderson Street, Boronia, Vic 3155. Tel: (03) 762 3308.

Enter N522 on Enquiry Card

Drum plotters

ADE has announced the availability in Australia of two of Houston Instruments' drum plotters — the CPS-19 and the DMP-40. The DMP-40, a single-pen drum plotter, features pen speeds of up to 4-4.2 ips and a format size of 11 x 17in. This plotter, suited for laboratory environments, has internal firmware which enables it to generate circles, arcs, ellipses and general curves automatically — all on command. Five different character sets are resident in ROM, which may be pre-entered normally or as italics. Up to 11 different line types are available, ranging from solid to variations on dotted and dashed lines. The DM-40 also will clip, window, viewport and scale to six size.

Further information: Anderson Digital Equipment, PO Box 422, Clayton, Vic 3168. Telephone: (03) 544 3444.

Enter N523 on Enquiry Card

Low-cost plotters

ROLAND Corp Aust Pty Ltd has released a range of high-resolution, low-cost plotters. The plotters are the eight-pen, multi-color DXY-800 model and the DXY-101 single-pen variant. They have both RS232C serial and parallel interfaces, and are able to accept serial input at eight different baud rates. They are designed for A3 format, and can operate in a flat or standing position.

The plotters command structures are in Basic, but Roland says the plotters also will accept Ascii code. Arcs, circles, and alpha-numberic are built into ROM forming part of the command structure, removing the need for further programming.

Further information: Roland Corp Aust Pty Ltd, 39 Victoria Street, Fitzroy, Vic 3065. Tel: (03) 417 1800.

Enter N517 on Enquiry Card

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GARDEN SUBURB, NSW 2288

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(049) 43 0624

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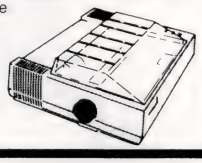

PRICE:
Parallel: **$CALL**
Cables available to suit most computers $35
MICROBEE CABLES **$50**

DISKETTES

CONTROL DATA DISKS IN PLASTIC BOX for APPLE, IBM, COMMODORE, ATARI, OSBORNE etc

$35 per box
$310 per 10 Boxes
($32/280 tax exempt)

+**$2** POST

AUTOMATIC ICE MODEM

Just released. Dennis O'Keefe's auto-answer, auto-dial 300/1200 baud RS-232 modem. Ring for details.

$259 ex **$295** inc

$6 COUR.

ROBOT ARM for Apple

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Includes APPLE INTERFACE and SOFTWARE
This is **NOT** a Toy!

A teaching tool or real-world device. Manufactured by Taiwan's largest Industrial Robot Manufacturer.

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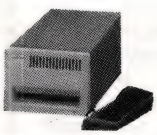
AMUST 10Mb HARD DISK for APPLE

The one you've been waiting for.

$10 COUR.



Includes interface and all software

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DETACHABLE KEYBOARD for APPLE II+

$6 COUR.

Just arrived. IBM Style.
Function, Cursor, Numeric
Lower Case Keys
Great Value at **$225** ex **$259** inc

APPLE ADD-ONS

	ex	inc
S.A.M. Synthetic Speechcard Phoneme-based	$ 65	$ 75
VISION 80 80 Column Card for Apple II/IIe (Please specify) Great Value at	$179	$199
VISION 80 128K Cards	$345	$395
16K CARD	$ 80	$ 90
ATLAS SLIMLINE DRIVE	$325	$365
APPLE JOYSTICK	$ 45	$ 45
APPLE KEYBOARD FUNCTION EXTENDER	$ 99	$ 99

ORDERING INFORMATION

Most of our 5800 customers around Australia order by Bankcard over the phone. Delivery is by WARDS COURIER at $6 or $10 for Overnight Delivery anywhere in Australia, or by Australia Post for cheaper goods. If you own an Apple, IBM, TRS-80, Atari, Osborne, Commodore 64, MicroBee, Kaypro or Amust microcomputer then we have peripherals and software for you at some of the lowest prices in Australia. Ring or write for our FREE catalog and newsletters. Six Month Full Warranty on Hardware.

GOODS DELIVERED BY WARDS EXPRESS

Speech recognition

TEXAS Instruments has announced the availability of two speech recognition and synthesis products for the TI Professional Computer. A turnkey application package, Speech Command, makes speech available as an input or output technique for existing applications. A Speech Command development kit allows incorporation of speech capabilities into software developed by third parties. TI says the Speech Command package includes a plug-in hardware package that accepts voice commands and also allows the TI PC to deliver vocal feedback. The Transparent Keyboard feature of the Speech Command software allows verbal communication with the computer, in addition to regular keyboard input. All voice processing is performed using TI's high-speed TMS 320 digital signal processor to perform real-time voice analysis and synthesis. The telephone interface is performed with another TI processor chip, the TMS 7000. The Speech Command hardware consists of two boards, arrange piggyback so that they use only one option slot in the TI PC.

Further information: 6-10 Talavera Road, North Ryde, NSW 2113. Tel: (02) 887 1122.

Enter N507 on Enquiry Card

Signal control

PAS's high-speed, low-cost modem isolators, claimed to offer isolation between all mainframe and mini-computer installations and external data terminal equipment, will handle all data and control signals both to and from the Modem and DTE at all baud rates up to 48 kilobaud, automatically. The units provide guaranteed isolation up to 5000V, both to Telecom Australia's network and to the receiving or sending mainframe, and also prevent earth loops. All units have status LED's for major functions, virtually no clock skew and are fitted with round cable as standard.

Further information: Professional Australian Systems, 883 High Street, Thornbury, Vic 3071. Tel: (03) 480 4339.

Enter N509 on Enquiry Card

IBM bytes on Apple

ANDERSON Digital Equipment Pty Ltd is distributing the following products of Quadram Corp, of the US. Quadlink is a board designed to allow Apple software to be used in the IBM Personal Computer. Quadlink is said to be functionally equivalent to an Apple computer on one board. Once installed in one IBM PC expansion slot, the Quadboard II is an all-on-one board which combines six IBM PC functions in one. The board combines two serial ports, chronograph, memory expansion, RAM disk and spooler — all said to be compatible with IBM PC hardware.

Microfazer is a buffer designed to take over a printing task without tying up computer time. Microfazer, turns a "dumb" printer with 8K-byte to 512K-bytes of RAM.

Further information: Anderson Digital Equipment Pty Ltd, 14 Whiteside Road, Clayton, Vic 3168. Tel: (03) 544 3444.

Enter N508 on Enquiry Card

More Professional

DIGITAL has announced several enrichments to its Professional series PC workstation. Standard features with currently shipped stations include 512 K-bytes of memory, (double the previous capacity), and floating point function. The integrated Winchester disk shipped with the top-of-the line 350 model now offers 10M-bytes of data storage, doubling the previous system capacity. The Professional series, which was released in May 1983, is shipped complete with 132-column monochrome monitor, low-profile keyboard and system unit with 800K-bytes of diskette storage capacity. All software written for early models of this series will run unaltered on the enriched version.

Further information: Digital Equipment Corp, Chatswood Plaza, Railway Parade, Chatswood, NSW 2067. Telephone: (02) 412 5252.

Enter N561 on Enquiry Card

Mini modem family

DATACRAFT (Australia) Pty Ltd is distributing the RAD-6 family of miniature short-haul modems. The three-member family is the SRM-6D Asyn (0-19.2 Kbps up to 35km), the SRM-6A Async (0-19.2Kbps up to 20km) and the SRM-6S Sync (1200-9600Kpbs up to 33km). Requiring no external power, the modems plug directly into the interface socket and are powered from the Transmit Data lead, even on dumb terminals.

They will generate positive and negative signals in accordance with RS-232 (V.24) protocol. Cost of the units is about $A150 for the SRM-6D up to $A350 for the SRM-6S.

Further information: Datacraft (Aust) Pty Ltd, Maroondah Highway, Croydon, Vic 3136. Tel: (03) 726 9911.

Enter N547 on Enquiry Card

Videotex service

A NEW Sydney organisation, Paul Budde Communications Pty Ltd, has established itself as a videotex marketing advice bureau. The founder, Paul Budde, of the Netherlands, was a consultant to the Dutch Government when that country established its public videotext system (Viditel), run by the Dutch Telecom organisation PTT. He was also involved in the introduction of Dutch interactive cable television.

Here in Sydney, Paul Budde Communications offers organisations a chance to look at public videotex systems — Viditel, Prestel (UK), Bidschirmtext (W. German) and Telset (Finland). The company also specialises in setting up databases.

Further information: Paul Budde Communications Pty Ltd, 66A Findlay Ave, Roseville, NSW 2069. Tel: (02) 411 4442.

Enter N548 on Enquiry Card

Black Box titles

DATACRAFT has the Black Box Catalog offering a range of reference books providing ready-to-use information on a wide spectrum of data communication subjects. The range covers seven titles including Data Communications Facilities, Networks and Systems Design, Practical Aspects of Data Communications, Techniques in Data Communications, Data Communications for Microcomputers, Data Transmission through to McGraw Hill's Compilation of Data Communication Standards.

Further information: Datacraft (Aust) Pty Ltd, PO Box 353, Croydon, Vic, 3136. Tel: (03) 726 9911.

Enter N549 on Enquiry Card

Case for no errors

CLAIMED to be the first device of its type available in Australia, the Case 1212 modem combines error correction, auto answer and auto-dial facilities with a full duplex 1200 bps modem in a single compact unit. Compliant with international standard CCITT V22, the 1212 operates either synchronously or asynchronously at 1200 bps full duplex on two wire leased or dial-up circuits. The built-in error correction capability is claimed to overcome the high error rates encountered on high speed switched network (dialup) applications, ensuring error free end-to-end transmission even under severe operating conditions. For flexibility in use with Telecom Australia's and other manufactures' V22 modems, not incorporating error correction capabilities, the 1212 modem is said to detect automatically the presence or absence of an error corrector in the modem at the other end of the line and adjust operations accordingly. The 1212 is priced at $A1490.

Further information: Case Communications Systems Ltd, 1-3 Rodborough Road, Frenchs Forest, NSW 2086. Tel: (02) 451 6655.

Enter N550 on Enquiry Card

Case switching

CASE Communication Systems has introduced DSX; a transparent data switching exchange designed to provide a flexible and efficient means of interconnecting terminals, computer systems, word processors and micros. Case claims that any asynchronous communication device connected to the DSX can "dial" by means of a simple character address string, any other device on the exchange. Connection of the devices will be effected automatically by the DSX and connection confirmation messages generated. The DSX can be expanded to handle more than 5000 ports with up to 2500 simultaneous connections. Data rates up to 9600 bps are supported, and there is no limit on code or speed combinations. Both direct connect, leased line and dial-up connections are provided for. The automatic baud rate (ABR) feature enables the DSX to detect and adapt automatically to the speed of the connecting device, allowing a single DSX port to be used by a number of terminals with different data rates. The DSX is available in a low-cost table-top enclosure for installations supporting up to 56 computer ports and/or terminal connections and in floor standing cabinet for larger installations.

Further information: Case Communication Systems, 1-3 Rodborough Rd, Frenchs Forest, NSW, 2086. Tel: (02) 451 6655.

Enter N551 on Enquiry Card

Modem changes

MODEM Technology's UDM-1200 modem is available with two different auto-answer modes. In the new mode, the whole auto-answer sequence is performed by the modem without control by the attached terminal. Other features of the UDM-1200 include a range of speeds from 300bps to 1200/75 and conforming to either CCITT or Bell (US) standards. Using appropriate software the UDM-1200 can also be used as an auto-dial unit. Modem Technology has opened an office in Melbourne to better service Victorian and Tasmanian clients.

Further information: Modem Technology, 1/55 Phillip St, Parramatta, NSW, 2150. Tel: (02) 635 9618.

Enter N552 on Enquiry Card

BBC network

ENGLISH computer company U-Microcomputers' networking system, the U-Net Micronetwork system, is now being shipped for the BBC Micro. U-Net is U-Microcomputer's product for the low-cost educational and business market and previously was available for Apple II only. U-Net is a shared resources network allowing up to 32 satellite micros to share up to six disk drives and up to two printers. A full printer spooling system is provided on both printers and the whole philosophy is to provide resources to the user as if he were the only user. U-Net is a star-network using a network host. Also new from U-Micro computers is its own dedicated network controller. Alternatively an Apple II+ or Apple IIe can be used as network host and controller.

Further information: U-Microcomputers Ltd, Winstanley Industrial Estate, Long Lane, Warrington, Cheshire, UK.

Enter N553 on Enquiry Card

Data link contract

PROFESSIONAL Australian Systems of Victoria has been awarded a Telecom Australia contract to design and manufacture data link analysers which Telecom will use in installing, commissioning and maintaining its digital data network. The portable mains-powered tester, model PAS9550, will generate test patterns and provide measurement and analysis of error patterns in the network. PAS manufactures a large range of communication devices and data protection and conversion units, and is a major contractor for research and development in this field.

Further information: Professional Australian Systems, 883A High Street, Thornbury, Vic 3071. Tel: (03) 480 4339.

Enter N554 on Enquiry Card

Gemlink Microwave

DATACRAFT has announced the addition of the Gemlink Microwave radio system to its local area networking product line. Gemlink will provide the bearer circuits required to complete LANs utilising Datacraft's range of statistical multiplexers and data concentrators. High-speed data-voice communications can be established between computer sites, having line of sight ranging up to 16km apart. Standard data rates range up to 19.2 Kpbs, plus high speed 1.544 and 3.152 Mbps and 2.048 Mbps.

Further information: Datacraft (Aust) Pty Ltd, PO Box 353, Croydon, Vic 3136. Telephone: (03) 726 9911.

Enter N555 on Enquiry Card

Superior signal

A COMPUTER tape which claims a superior standard of signal quality, tape cleanliness, toughness and durability has been released in Australia by computer accessory supplier Magmedia. The Epoch 480 tape is produced in the US by Graham Magnetic Inc, which has the largest share of the US magnetic recording products market. Its availability in Australia follows Graham's decision to strengthen marketing efforts internationally and the signing of a distribution agreement with Magmedia. The 480 tape is a development of the company's Epoch 4 tape. It utilises Epoch 4's binder and a new development in magnetic particles, said to represent a significant improvement over the ordinary oxide particles used in conventional computer tapes.

Breaking from its long-standing tradition of supplying only Verbatim disks in Australia, Graham has announced the addition of Xidex Precision disks to its product range. Magmedia has been appointed sole Australian distributor for the product, produced by Xidex Corp, of Mountain View, California.

Further information: Magmedia, 1 Lincoln Street, Lane Cove, NSW 2066. Tel: (02) 428 1100.

Enter N532 on Enquiry Card

Ergo-Span award

INTERIOR Modular Products Pty Ltd has won an Australian Design Award for its Ergo-Span adjustable VDU and word processor table. The Ergo-Span table, only recently released in Australia, has been totally designed and manufactured in Australia by Interior Modular Products at its Bankstown, NSW plant.

Further information: Interior Modular Products Pty Ltd, 15 Fortril Ave, Bankstown, NSW 2200. Tel: (02) 707 1322.

Enter N533 on Enquiry Card

Co-op computer

THE University Co-operative Bookshops have committed to supply and promote computer books and software in all branches. This follows the Bookshops' successful computerisation of its ordering, accounts, subscription and stock-control systems, encompassing 20 branches throughout Eastern Australia. The co-op has not only modernised its systems with its AWA Reality computer system, it is now modernising its stock, according to Jon Ruwolt, computer-ware controller.

Further information: University Co-operative Bookshop Ltd, 80 Bay Street, Broadway, NSW 2007. Tel: (02) 212 2211.

Enter N534 on Enquiry Card

FCS-EPS users

THE second Australasian FCS-EPS User Group meeting was held on November 10 at the Shore Inn, Artarmon, Sydney. More than 60 people representing users from Australia, plus New Zealand and S.E. Asia, attended. Papers were presented by such organisations as Coopers & Lybrand, Rothmans, Costain, Custom Credit, Mayne Nickless, Kern Corp, GIO, and Uncle Ben's. The papers covered provided a wide cross-section of applications of FCS-EPS, from simple applications to the design and implementation of complete menu-driven budgetting and consolidation models, the integration of consolidation and color graphics and the design of information systems. EPS Consultants demonstrated the new Micro FCS-EPS and the links to the mainframe version. Color graphics also were demonstrated, plus an outline of the new developments, FCS-IDS and FCS-Multi.

Further information: EPS, Suite 7, Garden Mews, 846 Pacific Highway, St Leonards, NSW 2065. Tel: (02) 439 3722.

Enter N535 on Enquiry Card

Datasaver to rescue

R.F. COMPUTER Communications has released the Datasaver, a self-contained battery powered AC power backup unit compatible with most popular micro systems. If the power line is lost or interrupted (a blackout) or if voltage drops (a brownout), Datasaver automatically switches to backup power within 1/100th of a second. If operating at full rated output load power, Datasaver will supply up to five minutes of power, and if the system is operating at half-rated output power, Datasaver will supply power for up to 15 minutes. The 90 watt unit is capable of powering such systems as the Apple series, HP desk-top models, Kaypro II, Osborne and TRS80 Model III, while the 200 watt unit suits the IBM PC, Otrona Attache, TRS80 model II and the Apple series with fixed disk.

Further information: R.F. Computer Communications, 2 Lawson Ave, Frankston, Vic 3199. Tel: (03) 781 4461.

Enter N536 on Enquiry Card

Computer books

THE Pocket and Technical Bookshop has established the Computer Bookshop offering 1000 to 2000 different computer titles, with business and personal computers being the largest sections featured.

Further information: The Pocket and Technical Bookshop, The Basement, 137a King Street, Sydney 2000. Tel: (02) 233 1944.

Enter N537 on Enquiry Card

For programmers

AN AUSTRALIAN magazine on programming for programmers has hit the news stands. The magazine, called */User*, is claimed to have 100 per cent Australian authorship and production.

Further information: Dr Y. Kuang Oon, Structured Language Resources, 121 Borg St, Scoresby, Vic 3179. Tel: (03) 763 8935.

Enter N538 on Enquiry Card

Clean power

THE research division of Sola Basic Australia Ltd, of Clayton Victoria, claims to have made a breakthrough in power conditioning for major computer installations.

The company claims its Sola 5th Generation Power Conditioners are totally different from standard designs now available. They have been developed to handle up to 600 per cent overload of rated capacity, while remaining within the 0.2 per cent regulation band.

The Sola 5th Generation Series is said to have higher tolerance of frequency variations, and can handle over and under voltages of 20 per cent. The lower heat loss is said to lead to a marked reduction in the load on computer room air-conditioning. The new units are being offered in both single-phase and three-phase models. The single-phase 64 Series can be ordered to handle loads from 10 to 60 KVA. The 95 Series, three-phase models, can be ordered from 20 to 1000 KVA.

Further information: Sola Basic Australia Ltd, 175-193 Wellington Rd, Clayton, Vic. 3168. Tel: (03) 560 0511.

Enter N539 on Enquiry Card

Osborne gathering

THE first meeting of Melbourne's Osborne users group was held at Malvern City Library on December 4. A distributor of Osborne computers in Victoria, Direct Data, has offered help to the user's group and has already collected 6 M-bytes of Osborne public domain programs for members of the user's group. There would be a nominal charge for copying and the disc supplied. Spares and Osborne catalogues also are being collected.

Further information: Alison West, Direct Data, 1065 High Street, Armadale, Vic 3143. Telephone: (03) 20 6949.

Enter N540 on Enquiry Card

Customsoft Forth

CUSTOMSOFT Developments Pty Ltd is distributing BS Forth. The system is fully optimised for the Zilog Z80 and runs under CP/M, MP/M II and Turbodos operating systems. BS Forth is an extended superset of Fig-Forth and Forth-79 Standard featuring full 16-bit and 32-bit integer arithmetic, 13-digit BCD floating-point arithmetic, string manipulation and multi-file virtual memory with concurrent multi-user support.

Further information: CustomSoft Developments Pty Ltd, PO Box 154, Wahroonga, NSW, 2076. Tel: (02) 48 1880.

Enter N524 on Enquiry Card

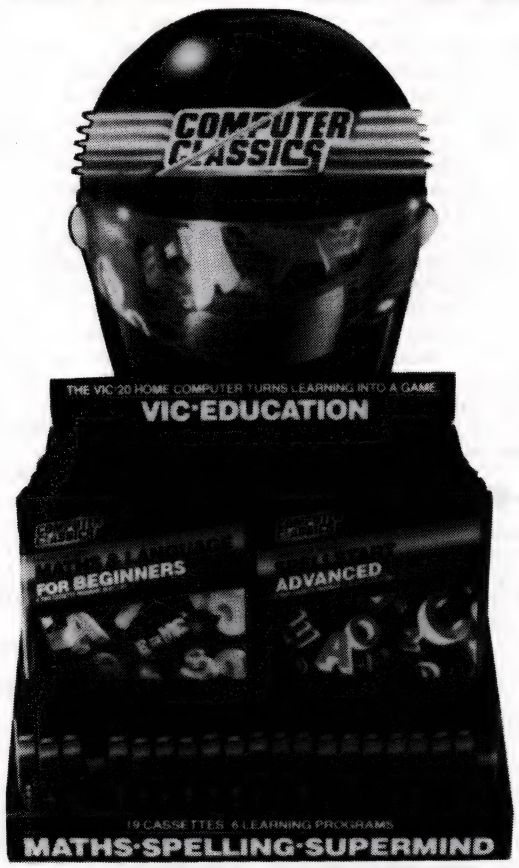
Alfatron's T/Maker

ALFATRON Pty Ltd has been appointed the Australian distributor for the T/Maker Co. T/Maker is a package which Alfatron says will integrate spreadsheet analysis, word processing, data management, and basic graphics, but it is not based on Visicalc or Visicalc concepts and uses no data transfer software to achieve integration. T/Maker III is said to enable all data to be accessible at all times because the software's capabilities reside in one program, rather than several programs pasted together. All data is incorporated in a single file and no transfers are required, unlike the more popular 1-2-3 and Context MBA packages. All data entry is done through a full-screen text editor, not through the classic spreadsheet format. The text editor has nearly all the features of MicroPro's Wordstar package.

Further information: Alfatron Pty Ltd, 1761 Ferntree Gully Road, Ferntree Gully, Vic, 3156. Tel: (03) 758 9000.

Enter N525 on Enquiry Card

Computer Classics classes



COMPUTER Classics is handling the Vic education series of education software designed for use on the Vic-20 home computer and the Commodore Datasette. The programs comprise a maths series and a language series, each teaching basic skills at progressive levels, plus a challenging game called Supermind which sharpens observation and memory skills. Vic Education was developed by a team of computer educationalists in Australia, and Computer Classics says it is geared towards Australian schoolchildren.

Further information: Computer Classics Pty Ltd, 11-15 Falcon Street, Crows Nest, NSW 2065. Tel: (02) 438 4866.

Enter N531 on Enquiry Card

Pims hits spot

IMAGINEERING, Australia's largest software manufacturer and distributor, has released a program titled Personal Investment Management Systems, which it claims allows the user to control all personal investments. PIMS — a product of Staptron Computer Consultants — is wholly Australian in its content and production, and is said to be a simple to use program available for the IBM PC, Apple and CP/M-based machines. Targetted to the small time investor for business or home use, it retails at $A395.

Further information: Imagineering, 3/579 Harris Street, Ultimo, NSW, 2007. Tel: (02) 212 1411.

Enter N526 on Enquiry Card

Sensible solution

THE Sensible Solution is sold and supported by Melbourne-based software house, Fletcher DP Services Pty Ltd. The manufacturers — O'Hanlon Computer Systems — claim that with The Sensible Solution "the historical problems of writing interactive programs have all but disappeared. Their product is in direct competition with the popular dBase II language by Ashton Tate. The Sensible Solution ranges from that of application generator through to a comprehensive procedural programming language. Features include: Multi-file relational data handling, interactive full screen data entry and updating, multi-index B-Tree data file management, true multi user facilities with record and file locking, auto code generation, report writer, inquiry facility and more. The Sensible Solution will run under CP/M TurboDOS, MS-DOS, MP/M, MmmOST and DPC/OS. A minimum of 48K RAM is required along with 300K+ disk capacity. The tax included price of the language will be under $A750.

Further information: Fletcher DP Services Pty Ltd, 320 St Kilda Road, St Kilda, Vic, 3182. Tel: (03) 537 2811.

Enter N527 on Enquiry Card

Atari goes soft

A NEW range of software for the IBM Personal Computer, Vic-20, Commodore 64, Texas Instruments, Apple II, Coleco and Intellivision has been announced by Futuretronics Australia Pty Ltd. Called Atarisoft, the new range of software has been developed by Atari Inc and will be available in the Australian marketplace during the last quarter. Included in the new range of Atarisoft titles are such notable best-sellers as Pac Man, Donkey Kong, Centipede, Defender and many of the Atari arcade hit games. Also coming in the future in Atarisoft will be Atari home management, personal development and educational packages.

Further information: Futuretronics Australia Pty Ltd, 1076 Centre Road, Oakleigh, Vic, 3067. Tel: (03) 579 2011.

Enter N528 on Enquiry Card

Assembly line

COMMODORE has released an assembly language package for its popular Commodore 64 computers. Assembler 64 is claimed to contain all the ingredients necessary to create a personalised code for the 64. It features a full screen editor with more commands than Basic, a DOS Wedge program that provides additional commands to make disk access easier, two loader programs that allow the user to load an object program anywhere in memory, and a power monitor program for debugging.

Further information: Concise Communications, 67 Alexander Street, Crows Nest, NSW, 2065.

Enter N529 on Enquiry Card

File-sharing

TEMPUS-LINK, an intelligent file-sharing software package integrating IBM mainframes and micros, has been released in Australia by Distributed Data Processing Pty Ltd. The package is designed to enable users of IBM Personal Computers to access virtual PC disks on mainframes running CICS, TSO or VM/CMS. PC users can communicate with each other and with the mainframe over the existing corporate SNA or non-SNA network. Tempus-Link comprises system and communications software for the PC and software for the mainframe that manages boxes of "virtual disks" defined in VSAM datasets. Data can be readily transferred between a virtual disk located at the mainframe and a physical disk attached to the PC. The developers of Tempus-Link, Micro Tempus Inc of Montreal, will be in Australia to hold seminars in Melbourne and Sydney on Dec 6 and 7.

Further information: Distributed Data Processing Pty Ltd, Level 29, 459 Collins Street, Melbourne, Vic, 3000. Tel: (03) 62 4698.

Enter N530 on Enquiry Card

The Final Word

PROSOFT has acquired the Australian distribution for the Final Word word processing package. The package is available for most CP/M and MS-DOS systems, and sells for $A399.

Further information: Prosoft, 403/450 Lt. Collins Street, Melbourne 3000. Tel: (03) 67 9098.

Enter N562 on Enquiry Card

Training in UNIX, C and Ada

SPAN is the leading training company in the European market place for Unix, C and Ada. This program has now been successfully launched in Australia. As such, we offer you a unique opportunity to become acquainted with these state of the art subjects — either by attending one of our workshops or seminars, or through our customised courses, held in your own installation.

SPAN provide an unrivalled service, totally independent of any manufacturer, from strategic studies for managers to software problem solving.

In the area of UNIX, C and Ada we offer a wide range of training:

* One day overviews for Managers
* Five-day workshops for System and Application Programmers
* Expert courses — UNIX tools and concepts, Advanced "C" language, Concurrent Programming in Ada
* UNIX System Kernel

We are fortunate to be able to call upon some of the most respected UNIX expertise in Europe, including Mike Banahan and Andy Rutter, co-authors of "UNIX — The Book".

For further information telephone Kevin Bell on (02) 929 0500.

SPAN AUSTRALIA PTY LIMITED
— TRAINING DIVISION

A SPAN GROUP COMPANY

56-62 BERRY STREET, NORTH SYDNEY, NSW. 2060.
TELEPHONE: (02) 929 0500 – 24 hr answer phone.

*UNIX is a trademark of Bell Laboratories.

ADA is a Trademark of US Defence Department.

Enter N007 on Enquiry Card

Warehouse move

IMAGINEERING has moved its entire warehouse area and relocated it in Jones Street, Ultimo. Imagineering says the new area's 15,000 square feet allows room for future expansion. The original office location will be expanded to encompass the entire floor with plans for a classroom to be constructed for dealer and inhouse seminars, a show room, demonstration area and a new conference area.

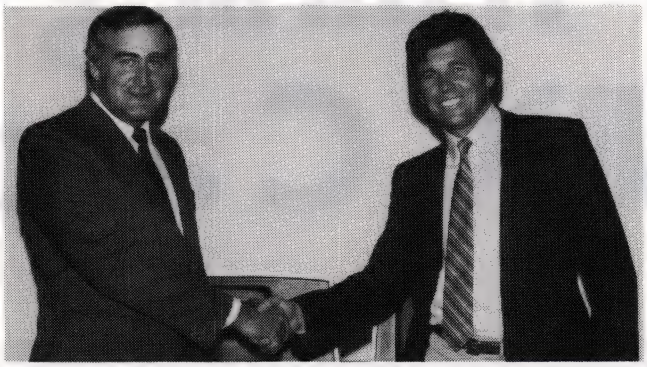
Tandy fired up

TANDY'S Perth computer centre is open for business, having recently been destroyed by fire. When the adjoining furnisher wholesale building was burnt-out the asbestos roof exploded — blowing out the walls, one of which fell through the Tandy computer centre roof. The new interior includes half of the Tandy stand from the recent 10ACC held in Melbourne.

Further information: Tandy Aust Ltd, 91 Kurrajong Ave, Mt Druitt, NSW 2770. Tel: (02) 675 1222.

Enter N501 on Enquiry Card

Edgeley edges into systems



Hitron partners Peter McAllister (left) and Michael Edgeley.

HITRON Systems Pty Ltd, the new Michael Edgeley business systems group, has been operating for several months from its base at Artarmon, Sydney. As well as securing a number of large system service contracts, Hitron Systems has been appointed a dealer for Nec computers and printers and Sage computer systems.

Hitron has appointed four senior engineers to handle system support for the new business equipment group. The Sydney appointments are Allan Sheady, Steve Adair and Tim Lester. The new Canberra branch manager is Graham Fraser.

Further information: Hitron Systems Pty Ltd, 55 Herbert Street, Artarmon, NSW 2065. Tel: (02) 438 4200.

Enter N502 on Enquiry Card

Eggs online

VICTORIAN egg producer, Fantasy Egg Farm has been using a Sord M23 computer for the last 12 months to handle accounting and production records functions, but now it is looking to use computers to improve its poultry breeding lines. Geoff Musgrove, one of the owners, says the Melbourne family company controls 90,000 birds and produces about 4 per cent of Victoria's total egg production. The Sord is running Pips to enable Fantasy Egg Farm to write its own programs.

Further information: Mitsui Computer Systems (Australasia) Pty Ltd, 1-3 Rodborough Rd, Frenchs Forest, NSW 2086. Telephone: (02) 451 7711.

Enter N503 on Enquiry Card

Apple key to IBM

AN AUSTRALIAN-DEVELOPED communications interface card, enabling Apple computer users to communicate with virtually any IBM mainframe, was launched at the Comdex exhibition in Las Vegas last November, Netcomm, which developed the card, and announced last May that it had signed an agreement with Apple Computer Inc giving Apple worldwide marketing and distribution rights, is about to begin local manufacturing.

Further information: Netcomm, Suite 8, 33 Ryde Road, Pymble, NSW 2073. Tel: (02) 498 5577.

Enter N504 on Enquiry Card

Apple rebates

APPLE is offering a voucher-based cash rebate system for Christmas with savings of more than $A1000. This offer covers 40 of the most popular accessories and software packages from Apple, Microsoft and Imagineering, and applies to purchasers of the Apple IIe starter system. Business users are being offered the spreadsheet model system Multiplan, from Microsoft, with the word processing system, Applewriter IIe.

Further information: Apple Computer, 32 Waterloo Road, Nth Ryde, NSW 2113. Tel: (02) 241 2016.

Enter N505 on Enquiry Card

Microsoft hotline

MICROSOFT Pty Ltd has appointed Phil Jones as technical support specialist, responsible for maning the company's telephone hotline, a service to deal with general and technical queries quickly and effectively. Jones comes to Australia from Hong Kong where he spent the past seven months as product support manager for Osborne, looking after Thailand, Singapore, Hong Kong, India and Indonesia. Previously, he spent three years with Osborne in the US working as a dealer support technician and head of the system support group. Jones also will be maintaining Microsoft's user database and authorising returns and updates.

Further information: Microsoft Pty Ltd, PO Box 98, Terry Hills, NSW 2064. Tel: (02) 450 2522.

Enter N506 on Enquiry Card

Attache tie-up

NISSEI Sangyo Co, which markets Hitachi MBE 16000 series personal computers in Australia has announced a tie-up with Attache Software. Attache's accounting software packages already are running on Hitachi's 16-bit MBE 16000 systems.

Further information: Nissei Sangyo Co, 151 Macquarie St, Sydney 2000. Tel: (02) 231 6625.

Enter N507 on Enquiry Card

PR exercise

COMMODORE has taken out one of Australia's top public relations awards. Commodore won the award for their sponsorship of the 1983 NSW Marathon Championship. The marathon was announced ast the outstanding public relations project of the year by the Minister for Communications, Michael Duffy, at a recent luncheon at Sydney's Hilton Hotel.

Unicorn in air

THE Civil Air Operations Officers' Association of Australia has selected the Australian-made Unicorn MPU-200 multiprocessor computer system for installation in its federal office. Melbourne manufacturer, SME Systems Pty Ltd — was chosen from 11 competing tenderers to supply an initial three user system with 50M-bytes of hard disk storage. The association intends using the system to prepare a database of its 1300 members around Australia, for word processing, and the record information for a research program. SME Systems wrote the database software and the accounting will be run under the recently released IMS Ascent II software packages. The complete package includes SME's S-100 bus Unicorn MPU-200 multiprocessor computer, two terminals, the DDU-8 8in twin disk drive unit with 2M-bytes of storage, a 50M-byte fixed/removable cartridge drive unit, and two printers. SME Systems says the system is expandable to 16 users. The executive secretary of the association, Peter Newman, says all correspondence will be filed on disk, and eventually paper copy files will be phased out.

Further information: SME Systems, 22 Queen Street, Mitcham, Vic, 3004. Tel: (03) 874 3666.

Enter N542 on Enquiry Card

Academy success

BRISBANE company Academy Computer Software has successfully tendered a Motorola 68000-based microcomputer to the Darling Downs Institute of Advanced Education. Valued at $A38,000 the system runs a Unix-like operating system, and is for the use of students enrolled in computer subjects.

Further information: Academy Computer Software Pty Ltd, Suite 4, Level 4, Lutwyche Shopping village, Lutwyche Rd, Lutwyche, Qld, 4030. Tel: (07) 57 9700.

Enter N543 on Enquiry Card

Hybrid teletex

CONTROL Data Australia Pty Ltd and Brisbane TV Ltd, Eracom Pty Ltd and Bass Marketing Pty Ltd presented two ½-day seminars on the concepts, future and 1984 opportunities offered by Hybrid Teletex and Videotex on November 17 at Sydney's Boulevard Hotel. Control Data says the recent Telecom announcement to provide a national Videotex service compatible with existing commercial videotex and teletext services provides the necessary government support to establish an interactive low-cost information media in Australia.

Payroll system

ALDONA Pay Service of Hawthorn, a division of Aldona Data and Electronic Systems Pty Ltd, has placed an initial order for 10 Ausdata 100 systems with Sydney manufacturer AusData Pty Ltd. Managing director of Aldona Pay Service, Stan Greene, says the systems will allow both country and metropolitan clients to encode payroll input data, validate it and transmit the data via a Telecom dial-up network to Aldona for processing.

Further information: Aldona Pay Service, 83 Riversdale Road, Hawthorn, Vic 3122. Telephone: (03) 818 0764.

Enter N544 on Enquiry Card

Portable order

THE largest single-order portable data entry installation to be implemented in Australasia has been completed by Dunlop Olympic Ltd and the TCG Group, of Sydney. The order, valued at about $A600,000, included more than 350 Norand portable terminals and five receivers supplied by TCG. Programming by TCG's software division was accomplished in 15-man weeks, and installation in Dunlop's Olympic's 320 retail stores throughout Australia was achieved within three months following a four-month pilot conducted in the Melbourne metropolitan area. Pat Gallagher, TCG's general manager, said the installation represented the most complex PDE program undertaken by his company and was considered to be one of the most advanced in the world because of the large amount of data each terminal was capable of recording and transmitting. TCG won the contract over two other suppliers.

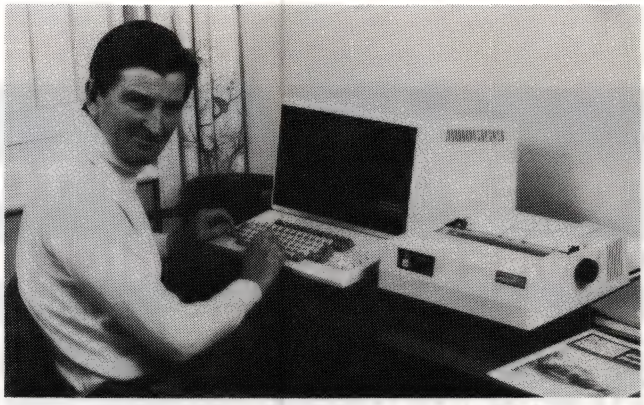
Cash management

LEXINGTON Data Corp of North Sydney has released what it claims is a complete inhouse computerised cash management system. Developed in Australia, the system is said to be suitable for use by financial institutions wishing to offer their clients the benefits of higher interest rates on a variable deposit basis. Lexington Data claims that the package also is suitable for companies offering an employee deposit scheme to their staff. The system is completely menu driven with users selecting the function required from the menu. Up to 10 deposit types from call to term deposits can be nominated and held for each client, and these categories are user nominated.

Further information: Lexington Data Corp, 6/275 Alfred Street, Nth Sydney, NSW, 2060. Tel: (02) 922 3533.

Enter N546 on Enquiry Card

Green thumbs opt for Sanyo



TIM and Keva North, are using a Sanyo MBC 1000 microcomputer to produce *The Australian Garden Journal.* Tim is editor, and Keva is production editor of the journal. The MBC 1000 is a CP/M entry level micro specifically for a business environment. Featuring a 4 MKZ Z80 CPU, a 12in screen displaying 80char by 25 lines and a detachable keyboard with separate number pad, cursor keys and five programmable function keys. A single 328K capacity 5¼in disk drive is included. The Norths claim to be saving $A400 an issue by putting copy onto floppy disks. Turnaround time for page proofs has fallen from 10 to three days.

Further information: Sanyo Data Products Pty Ltd, 127 Walker Street, Nth Sydney 2060. Tel: (02) 929 4644.

Enter N541 on Enquiry Card

Vote counting

CHARTERED accountants Peat Marwick developed a system to run on their Apple II or Apple III personal computers which performed the preferential vote counting for the annual Australian Film Institute Awards. Using Visifile, details of each voting slip are entered on the Apple II (or Apple III under emulation) and stored on a floppy disk. Using a specially designed Basic program, developed by Peat Marwick, the details are accessed and the preferences distributed. Visifile is then used again to count the votes and print the results, which are passed on to the Australian Film Institute. The film awards in September were the first time Peat Marwick was involved with the calculations. Mike Smith, of Peat Marwick, said that using Apple Computers had increased the speed with which the votes were tallied.

Legal eagles

SIGMA Wordplex Pty Ltd has designed a management and accounting software system for legal firms. It integrates all accounting needs of a legal practice from time management to producing balance sheets, Sigma Wordplex says. The package, Sigma Law, combines word processing and data processing for the legal profession. It incorporates six integrated modules, each linked so that any action in one model automatically adjust the others. A time recording and fee analysis module maintains records on accounts of chargeable and non-chargeable time. The trust, debtors and disbursements modules record cheques, receipts and journal entries on a daily basis. All balances are maintained on a client master file will all transactions to the client cashbook automatically updating control accounts and subsequently the private ledger. The private ledger is a separate module offering comprehensive reporting, and trial balances, profit and loss, balance sheets and graphs, when required. A nominee and private mortgage ledger has been incorporated in the package and calculates interest, commission, bookkeeping fees, produces maturity notices, interest reminders and disburses funds.

Further information: Sigma Data Corp, 157 Walker Street, Nth Sydney, NSW, 2060. Tel: (02) 436 3777.

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Computer bus

AUSTRALIA'S first mobile computer classroom will taken to the road this year in Gestetner's Computer Bus. Gestetner has converted a double-deck bus into a fully functional computer classroom equipped with 4 BBC microcomputer workstations, an Econet computer networking system, disk drives, printers, software library, books and manuals, and a Gestetner copier. The bus will visit schools throughout NSW.
Further information: Gestetner, 87-97 McLachlan Avenue, Rushcutters Bay, NSW 2011. Tel: (02) 356 1611.
Enter N556 on Enquiry Card

Computer course

COMPUTER workshops will run school holiday courses at the University of NSW, Sydney. Four week-long courses will be held this month, and students unable to get in will be given preference in the May holidays.

Course director, Richard Wilmot, said the week would cost $165, and was designed for late primary or early high school students with little or no computer experience.
Further information: Computer Workshops, Suite 1003, Westfield Towers, 100 William Street, Sydney, NSW 2011. Tel: (02) 357 2877.
Enter N557 on Enquiry Card

Catalogue job

MISS Georgina Cane of the Tasmanian Education Department has been appointed as the first executive director of the Australian Schools Catalogue Information Service. In 1979, Cane initiated negotiations with the Elizabeth Computer Centre and the State Library of Tasmania to develop for school use and implement at Bridgewater High School an online circulation system, believed to be the first such online system in an Australian school. Similar systems have since been implemented in other Tasmanian schools and colleges.

WP training

MITSUI Computer Systems has launched an audio word processing training course for use on the job. The course consists of a training manual, two instruction cassettes, a handbook and two diskettes. The course can be bought on its own, as part of the Mitsui M23 system, or in conjunction with a software package.
Further information: Mitsui Computer Systems (Australasia) Pty Ltd, 1-3 Rodborough Road, Frenchs Forest NSW 2086. Tel: (02) 451 7711.
Enter N558 on Enquiry Card

Pacesetter classes

PACESETTER Systems has announced it will be holding a course for the MC68010 and the various MC68000 peripheral chips in conjunction with Motorola Aust. This course will approach the topic from the design techniques area. A basic digital knowledge is required with some programming experience in assembler and higher languages. The course will be conducted by two instructors from the US.

In Melbourne, the course will be held at the Travel Inn, Drummond Street, Carlton [(03) 347 7922] from Jan 31 to Feb 3. In Sydney, it will be held at the Glenview Inn, 194 Pacific Highway, St. Leonards [(02) 439 6000] from Feb 6-9.
Further information: Pacesetter Systems, 16 Dickson Ave, Artarmon, NSW, 2064. Telephone: (02) 439 4655.
Enter N559 on Enquiry Card

MEGS birthday

AUSTRALIA's oldest personal computer club, the Microcomputer Enthusiasts' Group of Sydney (MEGS), will celebrate its 7th birthday in January. Formed in 1977, the club's objective is to provide a meeting place where microcomputer enthusiasts and beginners can gather and discuss various problems that may have arisen, be it hardware, software or whatever, and to pass information to other members. MEGS members include engineers, technicians, hardware and software experts, sales personnel and everyone from students to retired people having computers as a hobby, and most types of computers, being represented such as Apple, Commodore, Microbee and homebrew equipment is represented.
Further information: MEGS, PO Box 1309, Chatswood, NSW, 2067. Tel: (02) 638 1142.
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PUBLICATIONS

UNIX* and C

/USER is the Australian Unix* and C journal (plus C on micros). In the first issue we covered the following: C tutorial 1, C annotated examples, C strings, C book review, Unix tutorial 1, the Vi editor and the C shell. The November issue featured Unix and C tutorials plus articles on medical informatics/ screen handling with termlib + curses/ writing business programs in C, etc.
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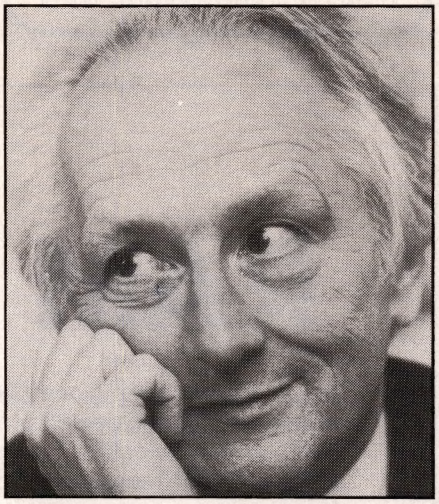
Next Issue

Comdex/Fall 1983

At the social event of the season, 80,000 people crushed into the Las Vegas Convention Centre and nearby hotels to brave a five-day endurance contest of walking, stand-up hot-dog lunches, sugar-coated platitudes from press agents, and more walking to cover 1400 exhibitors and 5200 booths. Micro reports the action.

Chuck Peddle in Australia

Chuck Peddle, one of the seminal figures of the micro computer industry visited Australia in December. After delivering a micro history lesson to the computer press he spoke to Ian Webster and Susan Coleman about microcomputing, Victor and Vicki and life in the fast lane.

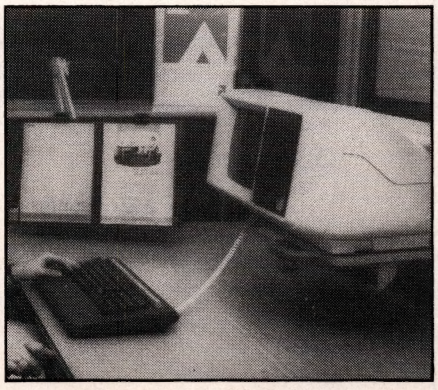


System Review

Tony Smith investigates the HP150, a system that could be Hewlett-Packard's most successful microcomputer and may revive interest in touch screen technology. Ian Webster takes Sharp's new briefcase portable PC-5000 to the beach for Christmas and Toshiba's top of the range T300 is reviewed.

Ergonomics and the user environment

You might not have installed a false floor, airconditioning, interruptable power supply and cardkey lock on your study door but there are ways to make your microcomputer installation comfortable. Micro considers chairs, tables, power supplies, keyboards, and video displays.



Five CP/M word processors reviewed, Part II.

AD INDEX

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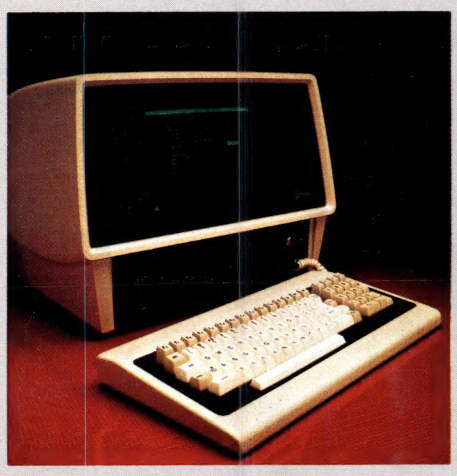

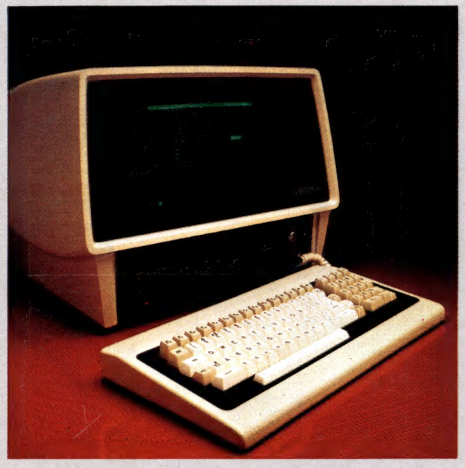

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